CONTINUANCE INTENTION TO USE ELECTRONIC COLLECTION SYSTEM IN NIGERIAN FEDERAL HOSPITALS

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ABSTRACT

Computerized information systems are being used by public sector organizations in the world over. However, studies have shown that there is under-utilization of such systems in the developing countries. Even though there are considerable numbers of studies that were conducted in finding out the influencing factors that lead to voluntary use of technology for personal use, still there are limited empirical studies that investigate the factors that influence continuance use intention of electronic information systems in mandatory system use environments in Nigeria. Thus, the purpose of this study is to empirically investigate the influence of perceived usefulness, perceived ease of use, perceived information quality and perceived enjoyment on the continuance use intention of electronic collection system in Nigerian federal hospitals. It also examines the moderating effect of computer self-efficacy on the relationship between perceived usefulness and continuance intention; and perceived ease of use and continuance intention. The study employs a cross-sectional survey and uses cluster sampling technique to collect data from 354 electronic collection system users with the help of self-administered questionnaire. Out of the 354 questionnaires distributed, 274 were returned, but only 231 responses representing 65% response rate were valid for analysis. The findings of the study revealed that perceived usefulness, perceived ease of use and perceived information quality positively and significantly influence continuance intention, whereas perceived enjoyment does not. In addition, the result shows that computer self-efficacy does not moderate the relationship between perceived usefulness and continuance intention; and perceived ease of use and continuance intention. Though the study had contributed in extending the Technology Acceptance Model to explain the behavior of public sector employees toward electronic system use in the workplace, it is only applicable to federal government hospitals alone. Therefore, further studies could be conducted to include other hospitals at both state and local government levels in Nigeria.

Keywords: Continuance intention, electronic system, electronic government, technology use, federal hospital

ABSTRAK

Sistem maklumat berkomputer telah digunakan secara meluas oleh organisasi-organisasi dalam sektor awam di seluruh dunia. Namun begitu, terdapat kajian yang menunjukkan bahawa sistem seupamanya tidak digunakan sepenuhnya di negara-negara membangun. Walaupun terdapat sebilangan besar kajian yang dijalankan adalah untuk mengetahui faktor-faktor yang mempengaruhi penggunaan teknologi secara sukarela bagi kegunaan peribadi, namun kajian empirikal tentang penggunaan sistem maklumat elektronik dalam persekitaran penggunaan mandatori di institusi sektor awam Nigeria adalah terhad. Oleh itu, tujuan kajian ini dilaksanakan adalah untuk mengkaji secara empirik tentang persepsi kegunaan, persepsi kemudahan, persepsi kualiti maklumat dan persepsi keseronokan terhadap niat untuk menggunakan sistem kutipan elektronik di hospital persekutuan Nigeria. Ia juga mengkaji kesan penyederhana efikasi kendiri komputer terhadap hubungan antara persepsi kegunaan, persepsi kemudahan dan niat berterusan. Kajian ini menggunakan kajian keratan rentas dan teknik persampelan kelompok untuk mengumpul data daripada 354 orang pengguna sistem kutipan elektronik dengan bantuan soalselidik yang ditadbir sendiri. Daripada 354 borang soalselidik yang diedarkan, sebanyak 274 borang soalselidik telah dikembalikan. Namun begitu, hanya 231 borang soalselidik yang sah dan boleh digunakan untuk dianalisis. Ia mewakili kira-kira 65% kadar tindakbalas. Dapatan kajian menunjukkan bahawa persepsi kegunaan, persepsi kemudahan, dan persepsi kualiti maklumat mempengaruhi niat berterusan secara positif dan ketara, tetapi persepsi keseronokan adalah tidak mempengaruhi niat berterusan. Selain itu, dapatan kajian juga menunjukkan bahawa efikasi kendiri komputer tidak menyederhana hubungan antara persepsi kegunaan, persepsi kemudahan, dan niat berterusan. Walaupun kajian ini memperluaskan Model Penerimaan Teknologi untuk menjelaskan kelakuan pekerja-pekerja sektor awam terhadap penggunaan sistem elektronik di tempat kerja, namun ia hanya terpakai untuk hospital kerajaan persekutuan sahaja. Oleh itu, kajian seterusnya perlu dijalankan dengan mengambil kira hospital-hospital lain di peringkat kerajaan negeri dan tempatan di Nigeria.

Kata kunci: Niat berterusan, sistem elektronik, kerajaan elektronik, penggunaan teknologi, hospital persekutuan

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DEDICATION

This thesis is dedicated to my beloved little son ABDULLAHI who was born and passed away during my PhD studies. May Allah have mercy on him. Ameen.

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LIST OF ABBREVIATIONS

AIS	Accounting Information System
CI	Continuance Intention
CBN	Central Bank of Nigeria
CSE	Computer Self-efficacy
eCS	Electronic Collection System
EGDI	Economic Group Development Index
ERP	Enterprise Resource Planning
FCT	Federal Capital Territory
FMC	Federal Medical Centre
FSH	Federal Specialist Hospital
FUTH	Federal University Teaching Hospital
GIFMIS	Government Integrated Financial and Management Information System
HeIS	Health Information System
HoIS	Hospital Information System
ICT	Information and Communication Technology
IDT	Innovation Diffusion Theory
IPPIS	Integrated Personnel and Payroll Information System
IS	Information System
IT	Information Technology
PE	Perceived Enjoyment
PEOU	Perceived Ease of Use
PIQ	Perceived Information Quality
PU	Perceived Usefulness
TAM	Technology Acceptance Model
TPB	Theory of Planned Behavior
TRA	Theory of Reasoned Action
TSA	Treasury Single Account
UN	United Nations
UTAUT	Unified Theory of Acceptance and Use of Technology

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Globally, Information and Communication Technology (ICT) are widely being used and adopted at the individual and organizational levels. The use of ICT is commonly found in highly developed countries like the United States (US) and other European countries (James, 2005). In the same trend, developing countries are also at the point of embracing ICT to enable them adopt and use recent technologies that ease lives and facilitate work processes in persons and organizations respectively. It is therefore not uncommon to see a good number of studies on technology acceptance in the world over (Wang, Meister & Wang, 2012).

Historically, the initial helping tool for ICT implementation in organizations is the computer. However, in today's technological changing world, the use and combination of computers and other communication technologies to process, store and disseminate information in an effective and timely manner has portrayed the real meaning of ICT (Aduke, 2008). Therefore, the use of ICT does not only enable organizations to process, store and disseminate information in an efficient manner, but also helps in ensuring that sound decisions are being made (Xue, Liang, & Boulton 2008). As such, serious and innovative organizations tend to develop and maintain their information database which is otherwise known as the information system (IS).

Information systems are organized ways of collecting, processing, managing and reporting information so that an organization can achieve its desired objectives

(Romney & Steinbart, 2012). It provides users with the benefits of real-time access to information for immediate and timely reporting (Hall, 2011). As such, most organizations invest substantial amount of resources in ICT with a view to minimize operational costs, improve efficiency and gain competitive advantage. (Schillewaert, Ahearne, Frambach, & Moenaert, 2005; Lederer, Maupin, Sena, & Zhuang, 1998).

Consequently, as business organizations invest more resources in system development, its continued usage paved ways for the computerization of operational activities by making a shift from the paper-based operations to electronic forms. These include, among others, electronic commerce (e-commerce), electronic tax filing (e-filing), electronic library (e-library), electronic ticketing (e-ticketing), electronic payment (e-payment), electronic government (e-government) and other web electronic services (e-services). Going by the current real-life situations, all these electronic channels or systems have changed the need for physical contact between seller and buyer or service provider and client, which set-in a turning point from the traditional face-to-face contact to web-based online transactions (Parasuraman & Colby, 2001; Chen & Chen, 2009).

Eventually, web-based and online transactions have resulted in the advent of e-commerce in the early 1990's which started to facilitate the buying and selling of products, information and services via the internet. From that time onwards, e-commerce is being used in the world's business environment, and in consequence suddenly brought a lot of changes in the payment systems of organizations (Dennis, 2004). One of the changes is that, business organizations were automatically challenged to switch from the conventional paper-based transactions to an e-payment

system (Fernandes, 2013). The continued adoption of these e-payment platforms by business organizations resulted in the introduction and use of electronic invoicing and electronic revenue collection systems around the globe.

Most importantly, the use of electronic platforms had not only changed the private sector alone, but also impacted and transformed the manner in which the public sector institutions operate. In the quest for efficiency, public sector organizations also resort to the application of ICT in their service delivery to the citizens via electronic government (e-government) platforms. This is quite important that such type of system can facilitate an interactive interface between government and its citizens in getting access to government information at ease (Ali, 2010). Moreover, to prove its importance, it was reported that e-government service adoption and use has significantly increased in most countries all over the world as compared to e-government survey in 2014 (United Nations, 2016). As such, the need for public sector organizations to deliver integrated, modernized and effective service delivery to its citizens is of paramount importance. It is in line with this that e-government is seen as a facilitating mechanism towards the effectiveness of public sector accounting in the payments system (Peter & Babatunde, 2012), procurement processes (Kaliannan & Awang, 2010), taxation (Hussein, Mohamed, Ahlan, & Mahmud, 2010) and elimination of fraudulent activities among government officials (Peter & Babatunde, 2012).

In response to the current development of technology adoption, the Nigerian government is trying hard to create the enabling environment that will facilitate ICT use in governance. In view of this, the proliferation of ICT and modern information

systems in the Nigerian public sector started to foster immediately after the introduction of e-payment system in 2007 by the Central Bank of Nigeria (CBN) under a federal government policy called - *Nigerian Payment System Vision 2020*. The new payment system was initiated and developed with the sole aim of improving the country's payment system through the participation of both individuals and organizations through online transactions (Central Bank of Nigeria, 2013). The policy was also aimed at transforming the Nigerian payment system from cash-based to electronic systems. Moreover, to foster its applicability and sustenance, commercial banks were meant to be the key players within the system in ensuring that the e-payment system is accepted and utilized by individuals and organizations in the country (Central Bank of Nigeria, 2013).

As explained earlier on, the e-payment system was officially launched within the Nigerian public sector institutions in 2007. It started with the implementation and adoption of a new payroll system called the Integrated Personnel and Payroll Information System (IPPIS). After its implementation, it was worrisome to find out that for the first nine months of IPPIS pilot adoption in only five federal government ministries, 500 million Naira (N500m) was reported to have saved, which prior to its implementation such large amount of fund is being embezzled and siphoned into the pockets of some few fraudulent government officials (IPPIS Case Study, 2014). As a result, this system was further stretched to other aspects (receipts and payments) of accounting systems in all the federal government institutions. Certainly, the system is functioning as an internal control mechanism that could combat fraud and corruption in the public sector (Alawiye-Adams & Afolabi, 2013).

Similarly, to facilitate prudent spending in the public sector, the federal government in 2012 introduced and mandated all federal ministries and agencies to use Government Integrated Financial and Management Information System (GIFMIS) for recurrent (excluding personnel cost) expenditure. This is to ensure that public resource management is achieved through the use of computerized systems (Ibrahim & Dauda, 2014). In other words, GIFMIS is an information system that was designed to assist in prudent management and effective utilization of public funds in public sector institutions.

Furthermore, in an effort to ensure that all federal government funds that are due for collection are centralized, secured and monitored; Treasury Single Account (TSA) otherwise known as Electronic Collection System (eCS) was formally introduced to support prompt collection and accounting for all government receipts. It also aims at enhancing the internal control system of government fund receipts by ensuring that all leakages are blocked (Bello, 2016). As such, all revenue due or earned by the federal government through its federal ministries and agencies is henceforth directed to be paid into TSA or any designated accounts maintained in the CBN. This is to enable the federal government maintains a close watch on its revenue generated and at the same time exercising total control over its resources (Akande, 2015).

Specifically, implementing the aforementioned e-government oriented measures was taken by the federal government to minimize fraudulent activities being perpetrated by some corrupt public sector employees. This is necessary to its survival as a nation because of the continuous decrease in revenue income from crude oil exports and other non-oil revenue sources (Okoye, 2015; Chima, 2014). For example, according

to 2016 annual budget, it was estimated that Nigeria will generate a total income of N5.7 trillion from both oil and non-oil sources, but the country only manages to generate N5.1 trillion. Also, it is worth to know that crude oil export is the major source that generates foreign exchange earnings to Nigerian economy and is currently in a downturn due to the persistent decline in crude oil price in the world's oil market. Also, it is a known fact that the Nigerian oil sector solely contributes to more than 80 percent of the country's total income (Adamu, 2015). Thus, the dwindling crude oil price of $114 per barrel in 2014 down to about $38 per barrel in 2015 has over the time negatively affected the country's economy as a whole (Ogochukwu, 2016; Budget Office of the Federation, 2016; Adamu, 2015; Aliyu, 2009).

Surprisingly, Nigeria is the sixth exporter of crude oil in the world and the first in the African continent, but most of its income that comes from the crude oil exports are not judiciously used, rather it is being stolen and embezzled by top government officials (Daniel, 2015; Gillies, 2009). It was estimated that due to the corruption that bedevils the Nigerian oil sector, only one percent of the total oil revenue benefits its citizens (Odularu, 2008). Equally, Asogwa (2013) emphasized that 95 percent of the country's wealth is in the hand of not more than three percent of the entire population and unfortunately, 98 percent of the country's citizens are living on less than three percent of the nation's wealth.

Consequently, the aforesaid issues were among the reasons that prompted the federal government to implement and adopt e-payment and eCS in the public sector with a view to strengthening the internal control system within the financial system in order

to ensure that all public funds are properly collected, monitored and safeguarded (Office of the Accountant General, Federal Republic of Nigeria, 2014).

As the Nigerian government is intensifying effort toward full implementation of electronic-based financial system, federal government hospitals are not from the exemption. Interestingly, since before the mandatory implementation of the eCS, most of the hospitals had been partially using computerized Accounting Information System (AIS). Additionally, some of them have already started to incorporate eCS into their respective AIS with a view to tracking and blocking leakages in day-to-day cash receipts collections. Electronic collection system is an online platform that is being used by Nigerian federal hospitals in collaboration with some commercial banks to enable the later have real-time access and control over their revenue collections (SystemSpecs, 2015). In other words, eCS is a tool that enhances the process of controlled cash receipts and guarding against cash mishandling in the hospital. It is important to express that instituting this measure is highly necessary for the federal hospitals due to the continuous decrease in funding from the government. It is evident that the budgetary allocation to health institutions by the federal government is declining over the years, because of the current economic recession the country is being faced with. For instance, in 2014, 2015, and 2016 the budgetary allocations for overhead costs to the entire health sector were N6.4 billion, N4.5 billion, and N3.9 billion respectively (Budget Office of the Federation, 2016).

The above figures have indicated a continued downturn in budgetary allocation to the public health sector and therefore federal hospitals were indirectly challenged to create other means of improving their internally generated revenue through health

care financing schemes and/or improved quality services to patients (Olakunde, 2012; Uzochukwu, Ughasoro, Etiaba, Okwuosa, Envuladu, & Onwujekwe, 2015). Additionally, it is highly important for the hospitals to strengthen their internal control systems through effective resource management with a view to ensuring that all funds are effectively collected, safeguarded and utilized (Huss, Green, Sudarshan, Karpagam, Ramani, Tomson, & Gerein, 2011).

In view of the above, the use of eCS for effective cash receipts collections for services rendered to patients was initiated in federal hospitals to serve as Revenue Information System (RIS) that handles hospitals' cash receipts, enhance the efficiency in cash collections as well as helping in fraud precvention and control. The system was also designed to control, minimize and combat cash mishandling and other financial corrupt practices within the hospitals' finances (Kabir, Saidin, & Ahmi, 2017). As a proactive measure, some of the federal hospitals have already set the pace in adopting and using the system for monitoring and controlling of their cash resources. Furthermore, implementation of the system goes the same way with the present policy of cashless economy and the country's realization of its vision 20:2020 (Olajide, 2012). Therefore, the use of eCS as a component within the AIS will greatly improve the operational efficiency in financial recordings and reporting in the federal hospitals' finances. Moreover, the use of eCS as an integral part of AIS enables hospitals to monitor, manipulate and give accurate results of revenue receipts which can be useful for effective decision making. Equally, the system facilitates timely access to financial information and provides up-to-date and comprehensive information on revenue generation at any point in time. Accordingly, the introduction of eCS in Nigerian federal hospitals is an indication that these hospitals are on the

same path with the global trend in technology use in health care service delivery. For instance, point-of-service collection processes and proper use of online payment technology had enhanced patients' medical billing and collections in hospitals in the US (Orenstein, Fox, & Urman, 2014).

Despite the advantages of eCS, little is known about its actual implementation and usage in public sector health institutions. This is due to the fact that, only few health professionals and other supporting staff have a good understanding and knowledge of computers and information technology (Bello, Arogundade, Sanusi, Ezeoma, Abioye-Kuteyi, & Akinsola, 2004). Furthermore, Asangansi, Adejoro, Farri, and Makinde (2008) reiterated that in African developing countries, computer literacy and its usage are shallow in hospitals because of the high cost of ICT equipment and internet connectivity. For this reason, they opined that establishing an integrated hospital information system (HoIS) is necessary for the smooth running of hospital operations.

In contrast to the above assertions, other researchers have found that employees working in Nigerian hospitals are showing interest in the use of ICT which could be attributed to its perceived usefulness in the workplace. Some of the studies revealed that some hospital staff have already owned personal computers and are ready to embrace progressive technologies that will make their job tasks much easier (Adeleke, Asiru, Oweghoro, Jimoh, & Ndana, 2015; Adeyoyin, Imam, & Oladapo, 2009). Similarly, the study of Vainikainen, Soriyan, Korpela, and Saranto (2015) is in agreement with the above findings as it revealed a positive attitude of health workers in Nigerian hospitals towards the computerized HoIS.

Evidently, the above studies indicate that users (employees) of eCS in federal hospitals have perceived the usefulness of technology use in the workplace. As such, it could be assumed that they are ready to use new technology in the performance of routine job tasks. However, this could not be ascertained until a proper research is conducted to establish scientific evidence to such assumption. Thus, further studies need to support such conclusions that PU of IS influences employee's intention and willingness to use (Ologeanu-Taddei, Morquin, & Bourret, 2015; Brenner, Kaushal, Grinspan, Joyce, Kim, Allard, & Abramson, 2015; Adeleke et al., 2015; Young, Klima, & Isaac, 2012).

In like manner, it is an established fact that the success of any system within an organization is dependent upon the perception and behavior of its end-users (Bhattacherjee & Hikmet, 2007). In fact, understanding the reason why individuals accept or rejects modern technology is among the most challenging issues in IS research (Venkatesh, Morris, Davis, & Davis, 2003). Al-Mamary and Shamsuddin (2015) found that Perceived Usefulness (PU) of a system by users strongly determines individual acceptability and intention to use. It has also been confirmed in other technology acceptance studies that PU significantly influences individual intention in system use (Tella & Olasina, 2014; Lai & Rushikesh, 2012; Šumak, Heričko, Pušnik, & Polančič, 2011). Similarly, perceived ease of use (PEOU) of a system by an individual was also recognized to influences and determines the acceptability or otherwise of a particular system or technology. Certainly, the perception on the simplicity of operating a system always carries weight in determining the intention of use by its end-users (Al-Mamary & Shamsuddin, 2015; Brown, 2002).

Furthermore, other past studies in IS have proved that perceived information quality (PIQ) in terms of flexibility, accuracy, timeliness and relevance is a strong determinant for the acceptability, satisfaction and continuous use of a system (Petter & Fruhling, 2011; Wang & Lu, 2014; Hsu, Yen, & Chung, 2015). As such PIQ is an influencing factor that could affect or influence the Continuance Intention (CI) of individual employees in using a system for execution of job tasks. Last but not the least, studies of Tella and Olasina (2014); Lai and Rushikesh (2012) and Rouibah and Abbas (2006) revealed that Perceived Enjoyment (PE) is also a factor that could influence end-users' intention to continue to use a system or technology. This is because, PE is being regarded as a motivational factor that drives people to enjoyably use a system due to its user friendliness or its simplicity in its application design (Sun & Zhang, 2006a).

Based on the past literature reviewed, it is evident that previous researchers have adopted different models and/or combination of variables in a variety of contexts and have established the significance of the aforementioned factors on CI of individuals to use a system in different technological aspects and under diverse cultures and environments for voluntary use (Ashraf, Thongpapanl, & Auh, 2014; Smith, Deitz, Royne, Hansen, Grünhagen, & Witte, 2013). However, there are limited studies that focus on finding out the continuance intention of individuals in a mandatory system use environment. In view of that, this study tries to fill in the gaps by investigating the influence of PU, PEOU, PIQ and PE on the CI to use eCS among federal hospital employees in Nigeria.

1.2 Problem Statement

Due to the technological advancement in the last half century, the desire to adopt and use modern IS in organizations all over the world has become commonplace. Information systems in modern times are mostly computerized and are purposely being used in organizations to improve efficiency in service delivery. That is the reason in recent years, system researchers have dwelled much on technology acceptance studies that pertain to individual CI to use technology. These studies have cut across different aspects of technology which can be seen from the works of Park et al. (2012); Ambak, Ismail, Abdullah and Borhan (2011); Lai and Rushikesh (2012); Balogun (2012); Tella and Olasina (2014); Al-Mamary and Shamsuddin (2015) and Sidek (2015) to mention among others.

Continuance intention is a term that is being used to imply the strength of an individual to continue to perform a specific behavior that may lead to acceptance or rejection which could be derived from a number of factors that seem to influence the intention itself (Wen, Prybutok, & Xu, 2011). These factors include: PU, PEOU, trust, self-efficacy, facilitating conditions to mention among others. Furthermore, it is worth to note that CI has been extensively researched in IS studies, but there is a need for further investigations to cover a variety of contexts and situations based on the recommendations obtained from past studies to further ascertain the extent of acceptability and willingness and continuous intention to use a system (Kuo & Yen, 2009; Luarn & Lin, 2005).

Information system researchers have explained in details the importance of individual intention in realization of system implementation success in organizations and thereby

offered recommendations for future studies to investigate the factors that induce its usage (Oyegoke, 2013; Lee, 2009; Petter, DeLone, & McLean, 2008). These recommendations are appropriate and could be applied in the Nigerian context due to its gigantic shift toward the realization of cashless economy. Remarkably, the federal government had made some efforts in computerization and the implementation of IPPIS in 2007, GIFMIS in 2013 and TSA collection system in 2015 with a view to computerized the financial system of the country so as to ensure efficiency, transparency and prudent financial commitments (Nwankwo, 2017; Ibrahim & Dauda, 2014).

Consequently, the above-mentioned developments had compelled public sector institutions to adopt and use modern computerized IS in the performance of institutional responsibilities. One of the reasons behind the implementation of such computerized systems is to promote service delivery and ensure prudence in the utilization of government funds (Ibrahim & Dauda, 2014). This is paramount to the Nigerian government because of the continuous decrease in government income over the years, which in consequence has affected the finances of all federal government ministries and agencies. In view of this, there is great need for government ministries and agencies to create ways to boost their revenue collections and/or institute strong mechanisms that could greatly assist in blocking revenue leakages (Ogochukwu, 2016; Akande, 2015; Adamu, 2015; Olakunde, 2012).

In order to proffer solution to the aforementioned problem, federal hospitals took-up the challenge and introduced eCS which was purposely designed to handle cash collections in an effective and controlled manner. The consequential effect of

implementation and use of this computerized system has greatly contributed to the enhancement of effective internal control system by curtailing employee fraud and cash mishandling within the hospital financial system. Thus, its adoption has contributed to combating irregularities and corruption that are widespread within the Nigerian public sector organizations (Akande, 2015).

However, despite this strong effort that has been made by the federal government in ensuring that modern electronic IS are used, there are still gaps existing between the resource commitments by government and its adoption and use in Nigerian public sector organizations. As such, recommendations for further studies in finding out the influencing factors that induce employees to intend or continue to use systems in the public sector organizations was emphasized in previous studies (Vainikainen et al., 2015; Oyegoke, 2013; Balogun, 2012).

For example, the studies of Balogun (2012) had assessed users' acceptance of electronic retail payment systems in Nigeria and found that there is inadequate usage and therefore recommended that for further research should be carried out to explore the reasons for non-acceptance of e-payment system between individuals working in both private and public sector organizations. Similarly, Tella and Olasina (2014) studied on predicting users' continuance intention toward e-payment system in Nigeria and found that PU, PEOU, perceived benefits, perceived satisfaction, enjoyment, speed, and attitude are all determinants of usage intention among individuals. It concludes that future studies should incorporate other characteristics of system quality and information quality of computerized IS. Furthermore, Oni and Ayo (2010) conducted a study on the level of electronic banking (e-banking) acceptance in

Nigeria and established that perceived credibility, computer self-efficacy (CSE), PU, and PEOU significantly influence user's intention to accept and use e-banking services. The study recommends that further studies with additional variables should be conducted so that a clearer understanding of individual behavior toward system use intention is attained.

Furthermore, the implementation of eCS in government organizations is an effort made by the federal government to improve its governance mechanism through the use of electronic systems. However, reports from the recent 2016 United Nations (UN) e-government survey has shown that Nigeria in the midst of other African countries is terribly lagging behind in its e-government use and adoption despite its potentials and aspiration for being among the first twenty most developed economies in the world by the year 2020. As a matter of fact, the report from the 2016 survey indicated that Nigeria has a very low Economic Group Development Index (EGDI) of 0.3291 which is relatively below the 2016 African regional average index of 0.4922. Thus, the country was ranked 21st among other 40 African member countries in the UN. In fact, records have shown that e-government usage has become worse over the years. This is evident from a comparison made between 2014 and 2016 surveys in which the country's rankings were 19th and 21st respectively. Therefore, based on this, it is strongly believed that studies need to be done to find out the reasons behind such existing gap which might be unconnected with public employees' behavior towards system use intention in the workplace.

In particular, prior studies have revealed that there is under-utilization of ICT in the Nigerian public health sector due to the reluctant attitude portrayed by staff in using

emerging technologies in the health care delivery system (Oyegoke, 2013). This is because, the majority of public employees in Nigeria are not familiar with modern office technology and therefore, not literate enough to use modern computers. Instead, they only preferred to use traditional office machines which are not more useful and reliable in work processes in the modern era of technology. Thus, a recommendation was made for further studies to assess the level of technology acceptance in ICT utilization in the health sector for improved efficiency, reduced costs and quality care delivery (Oyegoke, 2013).

On the other hand, even though the federal government is investing a lot of its resources in ICT with a view to ensuring that technology use in governance is achieved, however IS use in public sector organizations is under-utilized and if allowed to persist, the aim of the government to achieve its goals of cashless economy and fighting against corruption would be jeopardized. Therefore, this necessitates for empirical studies that will investigate the level of computer and system use so as to proffer solutions in enhancing the usability of the systems among health institutions workers (Adeleke et al., 2015; Asangansi et al., 2008). For instance, the study of Adeleke et al. (2014) revealed that professionals and other supporting staff (finance and accounts included) in public hospitals are quite aware of the benefits of health IT and engaging to accept and use within their job domains. As such, the study recommended that additional studies on assessing the readiness and the intention of staff to use modern systems and technology in the public health institutions in Nigeria should be conducted.

Furthermore, Vainikainen et al. (2015) conducted a study on how to enhance the PU of computerized IS of hospitals in Nigeria with a view to motivate technology use in Nigerian hospitals. At the end of the study, it was recommended that further studies should delve more in assessing the CI of end-users to use a new system in the workplace. In a nutshell, a critical look at the above listed studies conducted in Nigeria pinpoints the need to assess the level of influence of PU and PEOU on the employee's CI to use IS in public sector organizations (Ologeanu-Taddei et al., 2015; Adeleke et al., 2015). Additionally, these two factors PU and PEOU and a couple of other factors: PIQ and PE could be used in investigating their influence on continuance use intention within the context of eCS in Nigerian federal hospitals.

Another thing to consider is that, the findings on the relationship between PU and PEOU on CI in previous studies were quite inconsistent and as such, other factors were introduced to moderate the relationships (Sun & Zhang, 2006b). According to Sun and Zhang (2006b), the test for moderating effects always arises from the inconsistencies and limited explanatory power in previous studies. Past literatures have shown that CSE has significant influence on CI in using a system or technology (Ariff, Min, Zakuan, Ishak, & Ismail, 2013). In Nigeria, for example, CSE could be viewed as a determining factor for system continued use intention among employees in Nigerian public sector hospitals (Adeleke et al., 2014). In view of this, it is worthy to examine the moderating effects of CSE between PU and PEOU with the CI to use e-collection system in Nigerian federal hospitals.

In a nutshell, the persistent resistance of system use by public sector employees despite the remarkable changes and new trend of computer use has motivated the

reason to investigate the factors that could influence users'intention to use such systems. Formerly, organizations have introduced IS to employees for volitionaI use, in particular, the use of electronic mail for effective communication within and outside the organization (Alavi & Leidner, 2001; Schultze & Leidner, 2002). However, current trend has shown that most organizations do not use IS as an optional system but for compulsory usage nowadays (Malhotra & Galletta, 2005). Nevertheless, previious studies have established that managerial coercion to achieve compliance and effective performance from employees is often neither feasible nor economical. As such, it is apparent to investigate into factors that could suite and influence usage intention in mandatory setting without enforcement.

There are large number of past studies that used TAM in developing, testing, and supporting the relationships that exist among factors that relates to perception, attitudes, continuance intention, and usage behavior (Davis et al, 1989; Mathieson, 1991; Taylor & Todd, 1995). While the relationships have been consistently supported in volitional contexts (Oni & Ayo, 2010; Ho and Tuan, 2012; 2012; Xiang, Jing, Lee & Choi, 2014; Buettner, 2015), it is not clear if the same relationships will exist when the behavior and environment is mandatory (Brown, Montoya-Weiss, & Burkman, 2002).

Therefore, based on the above existing gaps and the recommendations made by past studies, coupled with inadequate literature and uncommon studies concerning the use of electronic systems in mandated public sector organizations, this study finds it appropriate to investigate the factors that influence the CI of public sector employees to use eCS in Nigerian federal hospitals.

1.3 Research Questions

Based on the stated problem statement, the following research questions were raised:

i. What is the significant influence of perceived usefulness on the continuance intention to use e-collection system in Nigerian Federal Hospitals?

ii. What is the significant influence of perceived ease of use on the continuance intention to use e-collection system in Nigerian Federal Hospitals?

iii. What is the significant influence of perceived information quality on the continuance intention to use e-collection system in Nigerian Federal Hospitals?

iv. What is the significant influence of perceived enjoyment on the continuance intention to use e-collection system in Nigerian Federal Hospitals?

v. Does computer self-efficacy moderates the influence of perceived usefulness on the continuance intention to use e-collection system in Nigerian Federal Hospitals?

vi. Does computer self-efficacy moderates the influence of perceived ease of use on the continuance intention to use e-collection system in Nigerian Federal Hospitals?

1.4 Research Objectives

The main objective of this research work is to determine the influencing factors that influence the intention to use e-collection system in the Nigerian public sector. Other specific objectives are as follows:

i. To investigate the significant influence of perceived usefulness on the continuance intention to use e-collection system in Nigerian federal hospitals.

ii. To investigate the significant influence of perceived ease of use on the continuance intention to use e-collection system in Nigerian federal hospitals.

iii. To investigate the significant influence of perceived information quality on the continuance intention to use e-collection system in Nigerian federal hospitals.
iv. To investigate the significant influence of perceived enjoyment on the continuance intention to use e-collection system in Nigerian federal hospitals.
v. To investigate the moderating effect of computer self-efficacy on the influence of perceived usefulness on the continuance intention to use e-collection system in Nigerian federal hospitals.
vi. To investigate the moderating effect of computer self-efficacy on the influence of perceived ease of use on the continuance intention to use e-collection system in Nigerian federal hospitals.

1.5 Scope of the Study

This research work covers the existing federal hospitals in Nigeria as at June, 2017. Three categories of federal hospitals were used for the study, which include: Federal University Teaching Hospitals (FUTH), Federal Medical Centers (FMC) and Federal Specialist Hospitals (FSH). The total numbers of these federal hospitals are 55 from which the respondents were drawn. In addition, cluster sampling technique was used to select appropriate samples that could guarantee the generalization of the research findings. A total number of 354 respondents (eCS users) were selected.

The scope of this study is specifically limited to selected factors that influence the intention to use: PU, PEOU, PIQ, PE and CSE. Thus, the extent of influence of these factors on the CI to use eCS in Nigerian federal hospitals was investigated.

1.6 Significance of the Study

Theoretically, this study is of immense contribution to the existing body of knowledge in IS studies. Though previous studies have established the existence of factors that influence individual CI to use a system, however, a large number of such studies have only centered on the voluntary use of systems and technologies among individuals, neglecting to investigate more on the CI of individuals under mandatory system use environment. Similarly, among the few that studied the mandatory use, the continuous intention to use a system is not being given much attention and as such, this study finds it worthy and significant in contributing to the existing body of knowledge in IS studies. In addition, the study has adapted the Technology Acceptance Model (TAM) as the underpinning theory and extended the theory with two independent variables: PIQ and PE. Firstly, the extension of the model with PIQ is a significant contribution being the fact that computerization of accounting systems is essentially meant to improve the quality of accounting information the system produces for effective decision making. Thus, in this regard, investigating and confirming its relevance and its influence on users' intention is highly important in IS studies. Secondly, extending the model with PE is meant to understand the beliefs that could portray the pleasure derived from using the system. In most previous studies, PE is being used in studying the voluntary use of technology or system such as the use of smart phone among individuals. Therefore, introducing this variable in an environment that system use is mandatory is expected to contribute to understanding the psychological state of mind of employees towards the use of the system which will in turn, stimulate their continuous use intention.

Also, this study contributes in expanding the bulk of literature within the technology acceptance studies. The model was tested in Nigeria – a Sub-Saharan African developing country that has different characteristics and government policies from other developing economies in other parts of the world. The uniqueness of Nigeria from other developing countries can be identified from the part of its emerging trend toward a cashless economy (Olajide, 2012). Moreover, the related literature review that was carried out during the course of this study reveals the need to test additional IS models in African developing countries. Thus, the framework of this study will serve as a reference point for future studies within the context of the Nigerian public sector, African countries and possibly other non-African developing countries. It might also be useful and appropriate for adoption; replication or extension in future IS studies.

Practically, the level of awareness, technical knowledge and willingness of public servants to use electronic systems in the workplace is very low (Bello et al., 2004; Asangansi et al., 2008). Thus, this study is useful in understanding public sector employee CI toward eCS use in the sector. Apart from eCS use, this study also gives a clue on the possible factors that could influence the intention of public hospital employees to continue the use of new technologies in the workplace in the future. Specifically, this research work is also significant to administrators and policy makers in providing them with a good understanding of individual psychological behavior pertaining to eCS acceptance and its continuous use intention among employees of Nigerian public hospitals.

Thirdly, with regards to the methodological contribution, the instrument used in measuring the variables in this study is an additional contribution to the pool of research measurements. It can be tested in future technology acceptance studies, both in Nigeria and other developing countries.

Finally, the study provides empirical evidence on the influence of PU, PEOU, PE, PIQ and CI to use eCS system in Nigerian federal hospitals with the moderating effect of CSE. Hence, this study will benefit scholars in the field of IS and other related fields in enhancing their understanding of the variables under investigation. Thus, it is a guide and reference material for future academic research.

1.7 Definitions of Key Terms

The definitions of key terms used in this study were derived from previous researches that were carried out in technology acceptance studies and these are briefly explained in Table 1.1.

Table 1.1
Definition of Terms

S/N	TERM	DEFINITION
1.	**Perceived Usefulness**	Refers to the extent or degree to which an individual believes that the use of a particular system or technology would enhance his or her job performance (Davis, 1989).
2.	**Perceived Ease of Use**	Refers to the extent to which a person believes that using a particular system is free from effort (Davis, 1989).
3.	**Perceived Enjoyment**	Refers to the degree to which the activity of using an innovation it is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated (Hong & Tam, 2006).
4.	**Perceived Information Quality**	Refers to the desirable characteristics of an Information System's output (Deleon & McLean, 1992).
5.	**Computer Self-efficacy**	Refers to the capacity of an individual to use computer technology in accomplishing job tasks (Compeau & Higgins, 1995).
6.	**Continuance Intention**	Refers to behavioral Intention and is defined as the strength of an individual intention to continue performing a specific behavior (Davis et al., 1989).
7	**E-government**	E-government is the employment of the internet and the world wide web, for delivering government information and services to the citizens.
8	**Hospital Information System**	Hospital Information System is a system that provides hospitals with an integrated system of administration in patient-related records, diagnoses, laboratory, pharmacy, scheduling, financial accounting, inventory management and human resources management.
9	**Accounting Information System**	Accounting Information System is a sub-system within an organization's information system that collects, process, analyze, store and disseminate financial and non-financial transactions that directly or indirectly affect the processing of financial transactions.
10	**E-collection System**	Electronic collection system is a computerized sub-component of AIS that enable effective cash receipt collections from patients and provide real-time reports to the management in a customized manner.

1.8 Organization of the Thesis

This research work is organized and presented in six chapters. Chapter One provides the general overview of the entire study that comprise of the background of the study, problem statement, research questions and objectives, significance of the study and scope of the study.

Chapter Two provides the basic concepts and emerging issues on e-government, HeIS, HoIS and AIS in hospitals with the emergence of eCS in Nigerian federal hospitals. It also reviews the underpinning theories on which this study is built upon with a view to finding the most appropriate model(s) that could best explain the phenomena. In addition, previous empirical studies on technology adoption studies that relate to the study variables are thoroughly and critically reviewed.

In Chapter Three, the conceptual framework and hypothesis development of this study are fully presented.

A step by step explanation of the methodology adopted in the conduct of this study was clearly explained in Chapter Four. These include the population, sample size, sampling technique, data collection procedures and method of analysis used.

Chapter Five presents the results and analysis of the research data in which descriptive statistics, factor analysis and multiple regression analysis were employed. Thereafter, full discussions of the research findings couple with an intensive description of the theoretical and practical implications of the study were vividly explained.

Lastly, the discussion on the limitations and suggestions for future research areas are also offered in Chapter Six.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter explains the basic concepts of Electronic government (e-government), Health Information System (HeIS), Hospital Information System (HoIS), Accounting Information System (AIS) and Electronic Collection System. It also describes the processes of the manual cash receipts collection and the newly e-collection procedures in Nigerian federal hospitals. In addition, a thorough review of IS models that are applicable to determining individual CI to use system or technology were critically reviewed and analyzed with a view to select the most appropriate models or variables in those models that can best explain the phenomenon under study. The research variables were adapted as follows: PU and PEOU from TAM, PIQ from Delone and McLean IS success model, from TAM 2 and CSE from Compeau and Higgins. In view of this, an extensive review of past empirical studies on the relationship between these influencing factors and CI was done with the purpose of understanding what has been known and what need to be known. The critical review covers all studies that were carried out on general electronic systems that relate to the research constructs of this study.

2.2 Concept of E-government

It is a well-known fact that ICT has affected almost every aspect of human life and in like manner, it has impacted and changed the mode of operations for both private and public organizations. As a result, various governments around the globe are gradually shifting from the traditional paper-based methods of public administration to modern

computer systems (Elbahnasawy, 2014). Thus, governments nowadays concentrate more on the use of ICT to perform and deliver their mandates to citizens. It is evident that the use of ICT in government has generally improved the efficiency of governance processes in public administration (United Nations, 2014). It has equally facilitated effective, accountable and transparent governance in ensuring that real-time information and online services are delivered to the citizens appropriately (Mukherjee & Roy, 2016). Furthermore, e-government has now become a global instrument of governance and due to its apparent benefits in strategic decision and policy making; many countries have resorted to implement all necessary machineries that will aid in its actualization (Lee, Hwang, & Choi 2012; Khan, Khan, & Zhang, 2010). As such, several studies on e-government systems adoption and its use were conducted in both the developed and developing countries (Al-Mayahi & Mansoor, 2012).

Moreover, e-government has been defined in the literature by different scholars from different perspectives. While some scholars viewed e-government as the usage of the internet and ICT to improve public sector performance, others see it as an instrument that extends government processes and services to citizens in an effective and efficient manner (Srivastava & Teo, 2004). For instance, Jeong (2007) defined e-government as the utilization of ICT and other web-based technologies to improve on the efficiency and effectiveness of service delivery in public sector administration.

According to the UN e-government Survey (2016), e-government is the engagement of the internet and the World Wide Web for delivering government information and services to the citizens. Similarly, Panzardi, Calcopietro, and Ivanovic (2002) defined e-government as a government-owned electronic systems that transforms relations

with the citizens, the private sector and other government agencies to promote citizens empowerment and service delivery, proper accountability and transparency and the enhancement of public sector efficiency. In view of the foregoing definitions, e-government can simply be defined as the employment of the internet and the World Wide Web for delivering government information and services to the citizens.

Historically, the emergence of e-government can be traced back to the early 1990s. Documents have revealed that US and Singapore were the first two countries that started to develop a working plan on how to use IT to improve public governance in their respective countries (Ojo, Janowski, & Estevez, 2005; Moon, 2003). Ten years later, various governments across the world started to take a dynamic measure for the implementation of e-government platforms in their various countries, not because of its technology driven nature, but as a transformative engine in public sector administration (Azab, 2009). In a report issued by UN in its e-government survey of 2014, in general, there is a significant development in e-government adoption among the 193 UN member states which is attributed to the current global investment in human capital, telecommunications and the provision of online services. However, despite the tremendous progress that has been recorded in the past years with regards to e-government adoption, African region is the least in EGDI ranking for both 2014 and 2016 survey reports. In fact, in the 2016 survey, the continent has a very low index of 0.2882 which is far below the world average ranking of 0.4922 as presented in Table 2.1.

Table 2.1
E-government Adoption: Regional EGDI - 2014 and 2016

Region	Regional Average 2014	Regional Average 2016
Africa	0.2661	0.2882
Americas	0.5074	0.5245
Asia Regions	0.4951	0.5132
Europe	0.6936	0.7241
Oceania	0.4086	0.4152
World Average	**0.4712**	**0.4922**

Source: United Nations e-government survey 2016

In particular, in reference to Table 2.2, Nigeria has a low EGDI of 0.3291 which is relatively below the 2016 world average index of 0.4922 has been ranked as the 21st and 143rd in Africa and the world respectively.

Table 2.2
E-government Development Index (EGDI) - Top 20 Countries in Africa

S/n	Region	2016 EGDI	2014 Rank	2016 Rank	Change in Rank
1	Mauritius	0.6231	76	58	↑2
2	Tunisia	0.5682	75	72	↑3
3	South Africa	0.5546	93	76	↑17
4	Morocco	0.5186	82	85	↓3
5	Seychelles	0.5181	81	86	↓5
6	Cape Verde	0.4742	127	103	↑24
7	Egypt	0.4594	80	108	↓28
8	Botswana	0.4531	112	113	↓1
9	Libya	0.4322	121	118	↑3
10	Kenya	0.4186	119	119	-
11	Ghana	0.4181	123	120	↑3
12	Namibia	0.3682	117	125	↓8
13	Uganda	0.3599	156	128	↑28
14	Gabon	0.3584	131	129	↑2
15	Tanzania	0.3533	146	130	↑16
16	Zambia	0.3507	163	132	↑31
17	Zimbabwe	0.3472	126	134	↓8
18	Swaziland	0.3412	138	136	↑2
19	Rwanda	0.3390	125	138	↓13
20	Angola	0.3311	140	142	↓2
21	Nigeria	0.3291	141	143	↓2
22	Senegal	0.3250	151	144	↑7
	Regional Average	**0.2882**			
	World Average	**0.4922**			

Source: United Nations e-government survey 2016

It can also be observed from the table that Nigeria's ranking position has fallen from 141st in 2014 down to 143rd in 2016. Therefore, this trend has clearly exposed the country's setback in e-government development index, which will definitely hinder the aspiration of the country to accomplish its vision of being among the first twenty most developed countries in the world by the year 2020.

According to United Nations Development Programme (UNDP) (2010) the components of e-government are classified into six. These components are: e-service delivery, e-administration, e-participation, access to ICT and connectivity, access to information, policy enabling environment and regulation. Similarly, Khan (2013) concedes with the classification of UNDP but with an additional component called 'democracy'. Also, according to some scholars, e-procurement had been identified by many scholars as a component of e-government (Aman & Kasimin, 2011; Rotchanakitumnuai, 2013). However, the studies of Aman and Kasimin (2011) grouped all the components into three. These components are: e-services, e-procurement and e-administration.

E-service in e-government context is seen as the use of electronic systems in facilitating the delivery of efficient services to the citizens (Khan, 2013). Similarly, Ndou (2004) defined e-services as a relationship that connects between government and its citizens through the use of automated services. In essence, e-service in public the sector is being used electronic filing of tax, vehicle registration, payment for utility bills, driver's license registration, and registration of business entities to mention among others.

The second component is the e-procurement which has been defined in the literature as the use of IT to purchase goods and services for public sector consumption. It also refers to the use of electronic systems in the processes of public sector purchases of goods and services (Hidayanto, Ditari, & Chahyanti, 2012; Rotchanakitumnuai, 2013). In fact, e-procurement is an essential tool for transparency fairness and accountability in public procurement processes. It is a platform that increases the efficiency of operations and reduces corrupt practices in government procurements.

The third component is the electronic administration (e-administration) and it is the component that this research study falls in. This is because, the use of eCS in public sector hospitals is a tool that is being used to ease and enhance the routine administration of cash collections. According to Khan (2013) and Ndou (2004), e-administration is the use of proper ICT equipment to enhance public sector organizations' internal routines and provides a platform for effective strategic planning and sound decision making. In a nutshell, e-administration is a component of e-government that aimed at providing transparency and accountability in public sector governance.

In view of the above, governments around the globe strive to use e-administration in shifting from the bureaucratic paper-based public administration system to a flexible, paperless and service-oriented system that provides efficient services to the citizens (Okwueze, 2010). As this trend continues to be embraced all over the world, the Nigerian government on its own part has been making gigantic efforts to improve and ease processes of public administration. For instance, the federal government had implemented a series of e-administration platforms in personnel cost management,

recurrent expenditure and cash collections with IPPIS in 2007, GIFMIS in 2012 and TSA in 2015 respectively. The implementations of these systems are geared toward improving government's revenue generation, curbing corrupt practices and enhancement of effective administration (Fatokun, 2015; Okolieaboh, 2015).

However, despite the tremendous effort put in place by the government for the success of e-administration in its ministries and agencies, the initiative is bound to be resisted by the employees that were meant to use it. One of the misconceptions and the reason for the resistance is the assumption that proper adoption and use of such systems might lead to loss of jobs, especially for the ones that are not computer literate or those that are skeptical to use computerized IS (Serban & Iorga, 2016). Thus, with this misapprehension in mind, some of the employees would definitely partake in providing all possibilities to frustrate and sabotage the smooth running of any new system of e-administration (Abasilim & Edet, 2015).

Similarly, studies have shown that ineffective communication, that is, the failure of organizational leadership to orient employees on the technology-driven changes that matched with workplace vision, negative past experiences, anxiety, effort and performance expectancy are all factors that contribute to employees' resistance to technology use in the workplace. Therefore, it is imperative to unveil and investigate the factors that could influence employees of Nigerian federal hospitals to continue to use eCS with a view to combat resistance and improve continuance use intention among the concerned staff.

2.3 Health Information System and Hospital Information System

The influx of the internet and computer technologies around the globe has paved way for easy access to the health care delivery system. It has also contributed in providing an effective way of information processing and dissemination among health care institutions (Adeleke et al., 2015). Furthermore, advances in computing and communication technologies have been playing critical roles in transforming hospitals and other health institutions from the traditional methods to the modern system health care delivery (Chaudhry, Wang, Wu, Maglione, Mojica, Roth, & Shekelle, 2006). These include the use of modern tools and equipment that capture, process and store information in an effective way. The most prominent and important tool in transforming patient records in hospitals is the electronic medical record system. Therefore, IS are very useful in hospitals because of the immense benefits to be derived from its adoption and use. For example, Health Information System (HeIS) is used in offering high-quality diagnoses and providing solutions designed to assist medical personnel in developing countries (Kalema & Kgasi, 2014).

According to Health Metric Network (2005), HeIS is the interconnection of sub-systems that captures, stores, retrieves, manages and transmits information of an individual and/or the activities and processes of an organization in the health sector. Similarly, according to World Health Organization (WHO) (2008) HeIS is a system that provides the underpinning for decision making with four key functions: data generation, compilation, analysis and synthesis, and communication and use. In this regard, HeIS can be defined as an organized system or effort made to collect, manage and disseminate information for the performance of health systems and its components.

On the other hand, Hospital Information System (HoIS) is a health care system within the HeIS that provides hospitals with an integrated system of administration in patient related record, diagnoses, laboratory, pharmacy, scheduling, financial and cost accounting, inventory and human resources management. According to Jayawardena (2014), HoIS is a comprehensive and integrated sub-systems purposely designed to effectively manage clinical routine operations, administrative and financial aspects of a hospital. Hospital Information Systems are essential instruments that aid modern hospitals and other medical institutions in the provision of effective health care services (Ismail, Jamil, Fareed, Rahman, Madihah, Bakar, & Saadi 2010). Thus, HoIS is a system that helps in the effective and efficient management of hospital resources. It is based on this that Littlejohns, Wyatt, and Garvican (2003) assert that HoIS is designed at improving management efficiency in hospitals in core medical services and administration such like managing finances, and improving revenue generation.

Previous studies have shown that hospitals that embraced and use HoIS are far better than the ones with the traditional system in terms of organizational efficiency and performance. For example, Jayawardena (2014) acknowledges that HoIS adoption improves hospitals' efficiencies in operational accuracy and up-to-date database. It also contributes in quality assurance services such as supporting clinical care evaluation and auditing of on-going processes. Furthermore, HoIS facilitates online assessment of patient condition, transmission of radiological images as well as effective communication between organizations and stakeholders (Sisniega 2009; Weimar, 2009). Moreover, Weimar (2009) conducted a survey on electronic health care advances and found a positive relationship between adoption of HoIS and

financial performance of hospitals. In a nutshell, HoIS use in hospitals improves individual IT competency and organizational performance as whole.

Previously, Nigerian government has not been given much attention and consideration for HoIS implementation in public hospitals due to the country's inadequate strategic government policies (Benson & Dha, 2011). As a result, there is incomplete and poor adoption of HoIS in most of the government hospitals in the country. However, some few routine operations and administrative processes in the hospitals are partially computerized. One among such systems is the AIS. Though, some federal hospitals are yet to fully implement the use AIS, but considerable parts of their systems are computerized. Besides, its implementation in Nigeria cannot hold without any challenge because of the lack of technical knowledge and expertise, inadequate ICT infrastructure in terms of internet access and telecommunication gadgets and skimpy electricity supply (Benson & Dha, 2011; Idowu, Cornford, & Bastin 2008). Furthermore, studies in the past have found that high capital requirement for implementing HoIS was found to be the major setback in its implementation in public hospitals not only in Nigeria, but also in most of the developing countries as well (Jha et al., 2009; Benson & Dha, 2011). Additionally, Verbeke, Karara and Nyssen (2015) found that among all factors, human factor is the stumbling block to HoIS implementation in sub-Saharan Africa.

Consequently, the absence of full and effective implementation of HoIS in Nigeria had compromised patient health care delivery and well-being. It has also brought about inefficiencies in the planning and administration in public hospitals in the country (Adeleke et al., 2015). Notwithstanding, as explained earlier, negative

perceptions of public sector personnel on modern IS has also contributed to the non-usage of HoIS. For this reason, this study finds it important to conduct a study that examines the influencing factors (PU, PEOU, PIQ and PE) on the intention that warrant IS (e-collection system) users to continue to make use of the system in accomplishing their job tasks. The relationship between the information systems are shown in Figure 2.1

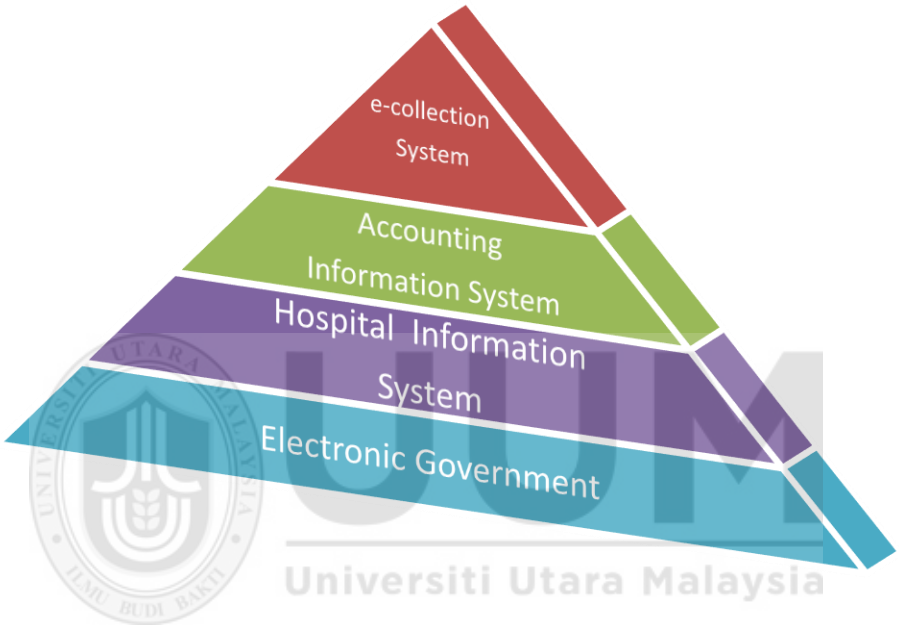


Figure 2.1: Relationship between Information Systems

2.4 Accounting Information System

Information systems are organized ways of collecting, processing, managing and reporting information so that an organization can achieve its desired goal (Romney & Steinbart, 2012). Thus, the benefits of using IS in organizations are numerous to mention. For this reason, most organizations nowadays inject a substantial amount of resources to develop and maintain their information systems to reduce costs and improved efficiency in operations (Alsharayri, 2012; Lederer et al., 1998). Equally, viewing from its cost-benefit point of view, it is apparent that the benefits of using an information system outweigh its cost. As a result, serious organizations strive to

commit much of their human and financial resources to reap-out the expected benefits from IS usage (Schillewaert et al., 2005).

Information systems in organizations cover every aspect of operations within a given system. Accounting Information System is one of the such sub-systems within an organization's IS that is responsible to collect, process, analyze, store and disseminate financial information that directly or indirectly affect the processing of financial reports (Hall, 2013). Similarly, Toluyemi, (1999) defined AIS as documentation and policies used to prepare accounting reports for economic decision making.

Moreover, AIS is a component of organization's administration that does not stop at financial data only, but includes all information that might be useful in informed economic decisions (Alsharayri, 2012). Furthermore, it has been recorded in the literature that the use of AIS enhances firm's profitability and organizational performance as a whole (Muhindo, Mzuza, & Zhou, 2014). In view of these advantages, both private and public organizations are now embracing the use of AIS in their respective organizations. Specifically, banks were among the early adopters of AIS in Nigeria and thus, the pioneers of AIS use in Nigeria. Consequently, the banking sector is the most efficient institutions in terms of operations and customer care within the economy in general (Ebiringa, 2010).

In the meantime, public sector organizations in Nigeria are now embracing the use of AIS in their operations through the use customized software packages that suit individual organizational needs and objectives. Federal hospitals are examples of such organizations. They developed and incorporate eCS into their respective AIS with a

view to enhance internally generated revenue and curb corrupt practices within the cash collection system. This is because, cash handling and management is a sensitive issue that affect the liquidity of organizations. As such both private and public organizations have to take proper measures in ensuring that effective tools are put in place to maintain a realistic fund for the running of an organization (Agundu, Okon, & Robinson 2008).

2.5 E-Collection System

E-collection system in the context of this study is a sub-system within the AIS of Nigerian federal hospitals being designed to improve the efficiency of cash collection strategies with a view to tackle employee fraud and cash mishandling. As such, eCS is a platform that provides for increased operational efficiency as well as effective financial reporting. Also, the use of eCS enables hospital administrators to monitor, manipulate and effectively safeguard their financial resources. It also facilitates timely access to information and provides up-to-date information on cash collections at any point in time. Figure 2.2 presents both the old and new processes of cash collections in a typical Nigerian federal hospital.

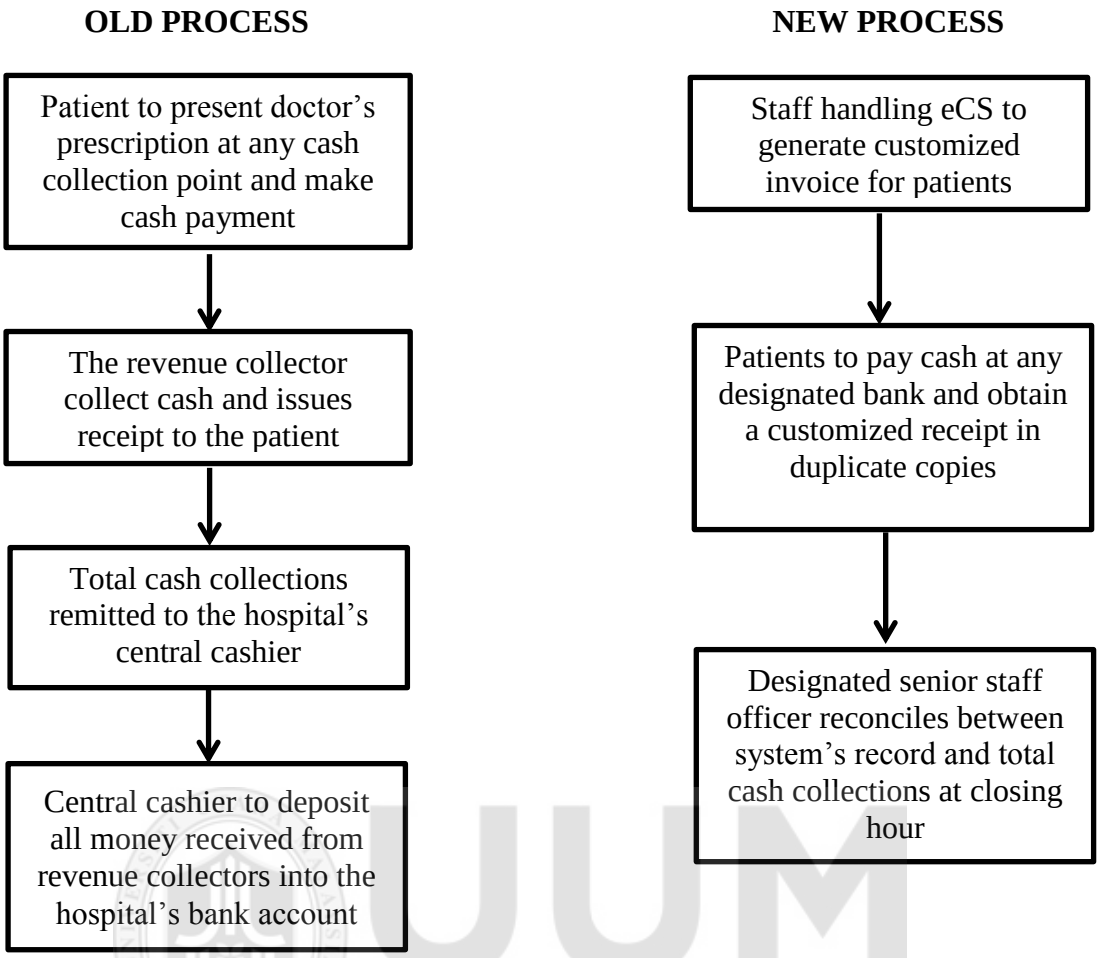


Figure 2.2: Cash Collections Transaction Flow in Nigerian Federal Hospitals

Moreover, eCS serves as a control mechanism that strengthens the cash collections in Nigerian federal hospitals. In view of the above, and having known the nature of public servants in Nigeria for inadequate ICT knowledge, corruption and fraudulent activities, and 'fear of change' to new system (Abasilim & Edet, 2015; Elbahnasawy, 2014), the study intends to make an inquiry into the factors that influence users' intention to use eCS in Nigerian federal hospitals.

2.6 An Overview of Information Systems Models

Several theories and models were developed by different scholars both within and outside IS field, purposely meant to examine technology acceptance and its use

among individual and organizations. As such, authors in the past have used different IS models to examine the relationship between influencing factors and use intention. These theories include: Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB), Technology Acceptance Model (TAM), DeLone and McLean IS success model, Diffusion of Innovation Theory (DIT), Electronic Readiness (ER), Work System Theory (WST), Technology-Organization-Environment (TOE) Framework and Unified Theory of Acceptance and Use of Technology (UTAUT). While some theories were mainly concerned with organizational context, others have concentrated on individual behavior with regards to technology use and adoption. For instance, TAM, TRA, TPB and UTAUT were mainly developed to determine individual attitude and behavior.

For instance, TAM is being used in various fields of studies with the aim of predicting individual attitude and CI to use a system or technology (Abbasi, Shah, Doudpota, Channa, & Kandhro, 2013.). The two prominent independent variables of TAM are: PU and PEOU. Though, in other studies, some theories/models are being adopted, but these two variables (PU and PEOU) are continuously being used in various studies with the aim of explaining and predicting individual behavior in technology adoption (Teo & Noyes, 2014; Pai & Huang, 2011; Wen, Prybutok, & Xu, 2011; Luarn and Lin, 2005).

Additionally, other IS models were developed to determine IS use intention and or satisfaction derived from the system by its users. The most famous model in this regard is DeLone & McLean IS success model. This model was designed to predicts and explains individual perception on system's satisfaction, intention to use and its

overall success (Teo, Srivastava, & Jiang, 2008; Lin, 2008; Wu & Wang, 2006). The three major constructs of the model are: information quality, system quality and service quality were primarily developed to explain almost 75% of total user satisfaction of a system (Seddon & Kiew, 1996).

2.7 The Underpinning Theory

A theory is defined as a general principle or set of assumptions that explains a phenomenon. The use of theory in research is of paramount importance to the extent that research hypotheses are always developed and tested with the aid of applicable theories. Therefore, the union between theory and empirical analysis is facilitated through better understanding of the issue under study. In scientific research, subject of interest are first determined followed by the theory that relates to the research together with the selected variables and finally hypotheses are developed and interpreted.

This research work has reviewed and found that several IS theories are being used in determining individual intention toward electronic systems acceptance and use. The most prominent theories applied for studying individuals' behavior include: Theory of TRA, TPB, DIT, TAM and UTAUT to mention among others. After a critical review of the aforementioned models, PU, PEOU and CI variables from original TAM were found suitable in explaining the relationships that exist among the research variables. Additionally, PIQ from DeLone & McLean IS model was also selected to explain the perception of users on the quality of accounting information eCS can produce. Also, PE was chosen from TAM 2 to assess the intrinsic motivation derived from the use eCS. Similarly, CSE variable was selected from Compeau and Higgins (1995) model to moderate the relationship between PU and CI and PEOU and CI. Therefore, the

combination of the aforementioned variables selected from those models stated above formed the conceptual framework of this study.

2.8 Theories and Information System Models

2.8.1 Technology Acceptance Model (TAM)

Davis (1989) developed the Technology Acceptance Model (TAM) to explain the usage and CI of users on system and new technology. It is the most prominent and powerful theory used in explaining the CI of individuals in information system research (Jen et al., 2009). In his theory, Davis believed that there is a casual connection in belief-attitude-intention-behavior that can predict end-user's acceptance and use behavior of a technology. According to the theory, usage behavior is predicted by CI and the latter is determined by attitude. This is shown in Figure 2.3.

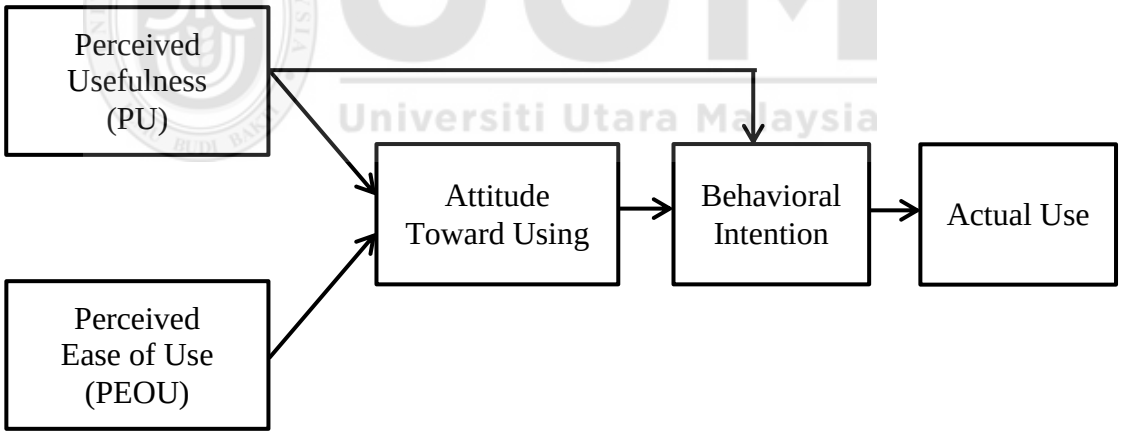


Figure 2.3: Technology Acceptance Model (TAM)
Source: Davis (1989)

Furthermore, attitude toward using a system or technology is being determined by two factors: PU and PEOU. According to Davis, PU is the degree to which a user of technology believes that the system will enhance his or her performance on the job. Similarly, PEOU is defined as the extent to which an individual believes that using a

particular system is free from effort. In other words, the system is simple to use. Therefore, according to the theory, these two variables are believed to be the most fundamental determinants in predicting end-user acceptance and use of technology.

Additionally, TAM has been the most popular and widely used model in technology acceptance studies in information system researches and other behavioral sciences. For example TAM has been used in predicting users' intention toward the use of e-commerce (Yang, Chye, Fern, & Kang, 2015; Khalifa & Ning-Shen, 2008; Wu et al., 2005), e-government systems (Sambasivan et al., 2010; Hung et al., 2006), e-health systems (Pai & Huang, 2011; Wu et al., 2008), e-mobile (Al-Mamary & Shamsuddin, 2015; Tsai, 2011; Suki & Suki, 2011; Schierz et al., 2010), e-learning systems (Lai & Rushikesh, 2012; Park et al., 2012; Terzis & Economides, 2011), e-banking (Nasri, 2012; Yaghoubi & Bahmani, 2010; Oni & Ayo, 2010) and e-payments systems (Tella & Olasina, 2014) to mention among others.

2.8.2 DeLone and McLean Information System Success Model

In response to an issue raised at the first International Conference on Information Systems (ICIS) to establish the 'dependent variable' for information system field, DeLone and McLean took-up the challenge and by 1992, a model was developed by these two IS researchers known as DeLone and McLean IS success model (DeLone & McLean, 1992). The model was developed with six variables, namely: Information Quality, System Quality, User Satisfaction, Use, Individual Impact and organizational impact. The variables in this model are independent of each other in measuring IS success and intention to use, but with some interdependency in other aspects (Petter & MacLean, 2009).

Since its development, DeLone and McLean IS success model was adapted and extended in various fields and applications and after about ten years, the model was reviewed and updated. The model was revised to address some issues that were rising at that time. One of the key issues raised is how the quality of an IS could be assessed. As a result, 'Service Quality' variable was added to the model. The reason behind the addition of 'Service Quality' variable to the model was as a result of the needed requirement to appraise IS when evaluating its success. The modified DeLone and McLean model is illustrated in Figure 2.4.

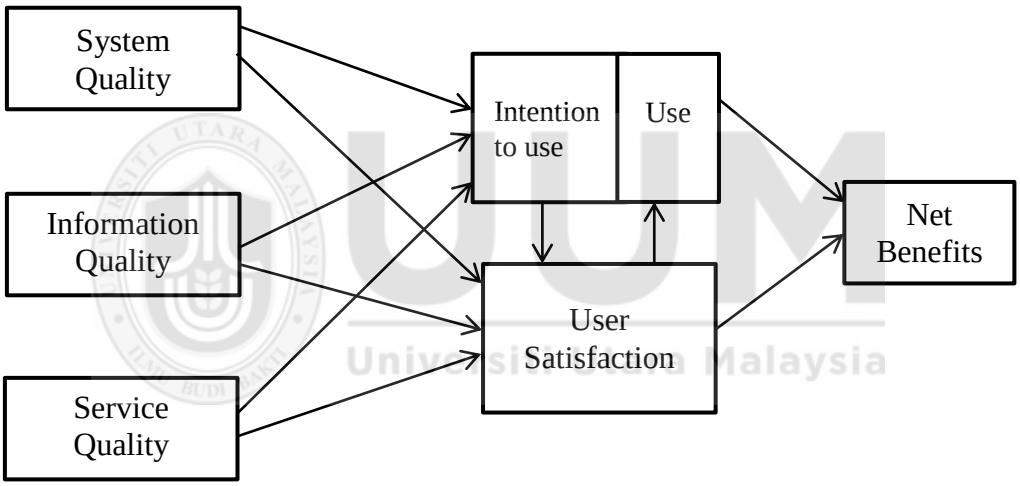


Figure 2.4: DeLone and McLean IS Success Model
Source: DeLone and McLean (2003)

According to DeLone and McLean IS (2003), system quality measures performance of IS in terms of functionality, ease of use, convenience, reliability, and other system characteristics. While Information Quality variable assesses the features of IS output such as its accuracy, completeness and timeliness, Service Quality variable measures the support and assessment of end-user of an IS. In addition, the difference between 'Intention to Use' and 'Use' is that, while the former relate to future consumption of IS service, the later one is about self-user report for actual usage. On the other hand,

'User Satisfaction' explains the approval or otherwise of a system by the end-users of an IS. Lastly, 'Net benefit' is the effect of an IS that surfaced either individual or organization which is always measured in terms of PU or organizational performance respectively.

As with other IS model, DeLone and McLean IS success model has been used and validated in terms of evaluation of IS effectiveness in past studies and it has been found to be reasonably good in evaluating IS success at both individual and organizational levels (McGill, Hobbs, & Klobas, 2003). For the purpose of this study, 'Information Quality' is being selected from this model and combined with PU, PEOU and PE to predict the outcome of use intention as contained in the model. The use of this variable is aimed at assessing the output characteristics of eCS such as the frequency, timeliness and accuracy of cash collections reports.

In view of the above reviews, this study finds it suitable to use TAM with the extension of two additional variables: PIQ and PE. This is justified from the point of view that TAM is the most popular technology acceptance model used in IS research (Jen et al., 2009; Chuttur, 2009) and proven to have exhibited considerable merits over and above other models due to its continuous predictive power of 40 percent (Abbasi et al., 2013; Legris, et al., 2003). Also, due to its parsimonious structure, TAM had attracted a lot of researchers to extend or replicate the model both within the IS research field and other behavioral science studies (Abbasi et al., 2013). Nevertheless, there are lots of debate among IS researchers as to whether TAM variables (PU and PEOU) could serve as the actual predictor of CI and actual usage (Turner, Kitchenham, Brereton, Charters, & Budgen, 2010). In addition, CSE is used

as an extension to moderate the effect between PU and CI and PEOU and CI is borne out of the fact that previous studies have established positive relationships between CSE and PU, and same with CSE and PEOU. There are also recommendations by previous researchers in this regard which has been explained at the end of this chapter.

2.9 Continuance Intention in Technology Acceptance Studies

Technology acceptance studies within the IS research field had been studied by many scholars, both on individuals personal use and for organizational operations. Technology acceptance is the individual approval to consume or use a product or service respectively (Venkatesh, & Davis, 2000). It is under the IS research domain that technology acceptance studies emerged. Several constructs had been used in determining the extent of technology acceptance and adoption. As such, CI is an independent variable that is being constantly used in measuring individual characteristics that was originated from the Theory of Planned Behavior (TPB) model of Ajzen (1985). It is used to measure the level of intention of an individual toward the acceptance of technology. For this reason, CI is defined as the probability of an individual to perform or decline to perform a particular behavior (Ajzen, 1985).

Technology Acceptance Model of Davis (1989) had also adopted the above definition to form and explain his model of TAM. This study in particular, will use TAM as the adopted model towards establishing the factors that influence the intention to use eCS by users within the Account and Finance departments in Nigerian federal hospitals. This is because; CI is a dependent variable that is being used in information system and technology acceptance studies. Also, other technology acceptance models like

UTAUT and McLean and DeLone IS success models enclosed CI variable in them purposely to determine the intent of individual characteristics toward the acceptance and use of technology.

Thus, several empirical studies have been conducted in relation to finding the relationship between CI and acceptance/use of technology. These studies have cut across many aspects which include e-service systems, online systems, learning systems, internet banking adoption and online social media to mention but a few. Some of the studies include Herbert and Benbasat (1994); Yousafzai, Pallister, and Foxall (2003); Treiblmaier, Pinterits, and Floh (2004); Mofleh and Wanous (2008); Kuo and Yen (2009); Chen and Li (2010); Revels, Tojib, and Tsarenko (2010); Pai and Huang (2011); Wen et al. (2011); Ho and Tuan (2012); Yousefi and Amir (2015).

For example, among the early studies on CI to use IT in hospitals was the work of Herbert and Benbasat (1994). The researcher tries to measure the influence of attitude toward technology use, subjective norms and perceived voluntariness on users' intention in hospitals. A field survey was conducted on a sample size of 151 respondents. The result from the regression analysis shows that user CI is significantly influenced by attitude and subjective norms.

Also, Yousafzai et al. (2003) carried out a research on e-banking adoption, though the study was conceptual, but the study had developed a proposed model that identifies two antecedents that can influence customer's trust in e-banking acceptance. Perceived security and perceived privacy were the two antecedent variables used. In addition, these variables were being moderated by the perceived trustworthiness of the

bank. Thus, the study had conducted groundwork for future empirical studies to test the relationships among the variables.

Similarly, the empirical work of Treiblmaier et al. (2004) uses online survey questionnaires with a sample size of 631 respondents with the aim of identifying the factors that influence individual intention to adopt e-payments in public sector transactions. Security and frictionless use were the two independent variables that were measured against the user's intention. Structural Equation Modeling (SEM) was employed as a statistical tool and found that the intention to use e-payment system in the public sector is greatly determined by the trust on the security of the e-payment system and frictionless use of the system.

Mofleh and Wanous (2008) conducted a study within the e-government framework with the aim of understanding the influencing factors that contribute to citizens' adoption of e-government services in Jordan. Compatibility, awareness, previous experience trust in the internet, trust in government were the independent variables used to determine citizens' intention to use e-government services. For this reason, a survey was carried out on 660 Jordanian citizens to express their opinion on e-government services usage intention. Descriptive statistics and regression analysis was used for the analysis and the results indicate that intention to use government services is influenced by trust in government, trust in the internet and compatibility.

Furthermore, Kuo and Yen (2009) carried out a research to determine the factors that influence the CI to use value-added services in 3G mobile among its users. The study uses Technology Acceptance Model (TAM) with some extension. The independent

variables for the study are PU, PEOU, personal innovativeness and perceived cost. A survey was conducted with 269 respondents and found that attitude, PEOU, PU and perceived cost were the main factors that increase consumers' intention to use 3G mobile value-added services.

Another study which was carried out by Chen and Li (2010) developed an integrated model that predicts individual's continuous intention to use e-services based on the concept of TPB and Technology Readiness. Attitude, subjective norms and perceived behavioral control were used as the independent variables with a casual cognitive determinant of technology readiness. A web-based survey was conducted on 488 undergraduate students from five universities in Taiwan and found that intention for continuance use of e-services is greatly determined by attitude and perceived behavioral control of the users.

Another study on CI was the one carried out by Revels et al. (2010). It was aimed at understanding the factors that contribute to the adoption of mobile services in Australia. The study develops a research model that comprised of the following independent variables: PU, PEOU, PE and perceived cost. Customer satisfaction was used as an interacting variable between these variables and the usage intention. A convenience sampling technique was used in selecting the respondents in Australia. One hundred and forty-one responses were used for the analysis and the result show that usage intention is positively influenced by PEOU, PU and PE.

Furthermore, Pai and Huang (2011) conducted a study with the aim of designing an appropriate model that will lead to healthcare information systems acceptance and use

in hospitals. The study combined TAM and DeLone and McLean IS success model to explain the relationship. Information quality, system quality and service quality were the independent variables, while PU and PEOU served as the moderating variables respectively. Structural Equation Modeling (SEM) was employed on a sample size of 366 and it was found from the result that user's intention to use healthcare information system is positively determined by its information quality, system quality and service quality mediated through its PU and PEOU.

Wen et al. (2011) carried out a research to examine the factors that an influenced consumer continues intention to use online shopping in USA. The study uses PEOU, PU, PE, confirmation, satisfaction and trust as the independent variables. The study employed a survey questionnaire for the data collection from a sample size 230 university students. The findings from the analysis indicate that online re-purchase intention is significantly influenced by PEOU, PU, and PE.

Also, Ho and Tuan (2012) conducted a study to explore factors that influence female CI towards online shopping to know whether certain variables have significant impact on the intention to online shopping among females in Taiwan. The study employed survey method with a sample size of 240 respondents. Descriptive statistic was the statistical tool used for analysis and it was found that the intention to use online shopping is determined by performance expectations, effort expectation, social impact and involvement.

Ali, Rahman, and Ismail (2012) examine the key drivers of users' CI of AIS and found that relative advantage and organizational readiness are positively related to

attitude toward AIS use intention. However, relative advantage is the strongest antecedent among all the factors that were tested. In addition, the study reveals that attitude toward AIS use is positively related to satisfaction and CI. Likewise satisfaction is also positively related to continuous intention.

Therefore, the above studies have shown the importance and justifications of using CI in determining individual intent towards technology acceptance and use. Also, looking at the previous studies reviewed, various variables were used to determine individual intention and as such this research study adopted CI as the independent variable to examine the level of intention to use eCS within the context of Nigerian federal hospitals. This is because, CI has been found to be valuable in ascertaining the extent of acceptability and willingness to use a system among its end-users (Kuo & Yen, 2009; Luarn 2005). It has also been considered to be an important variable of individuals' use intention in realization of IS success in organizations (Oyegoke, 2013; Petter et al., 2008).

2.10 Perceived Usefulness

According to Davis (1989) PU is the extent or degree to which an individual believes that the use of a particular innovation would enhance his or her work or job performance. In other words, it refers to the extent to which a person believes that his productivity and effectiveness would improve his job performance as a result of using a system (Rouibah & Abbas, 2006). Perceived usefulness is a determinant of individual behavior toward acceptance or rejection of technology. It was also argued that intention and usage of information system are strongly determined by the PU of a system (Karahanna & Straub, 1999).

2.10.1 The Influence of Perceived Usefulness on Continuance Intention

Perceived usefulness is the extent of believing that the use of a particular system will enhance individual work (Davis, 1989). This construct is the major independent variable that TAM model relied upon in testing the extent of the relationship between individual perception and CI in technology adoption. As such, several studies, like Karahanna and Straub (1999); Rawstorne, Jayasuriya, and Caputi (2000); Luarn and Lin (2005); Rouibah and Abbas (2006); Wu, Shen, Lin, Greenes, and Bates (2008); Sambasivan et al. (2010); Oni and Ayo (2010); Park Nam, and Cha (2012); Lai and Rushikesh (2012); Tella and Olasina (2014); Al-Mamary and Shamsuddin (2015); Diatmika, Irianto, and Baridwan (2016); Elkaseh, Wong, and Fung (2016); Mou, Shin, and Cohen (2016); Parayoga and Abraham (2016) and Shittu, Gimba and Ahmed (2016) have all found positive and significant relationship between PU and CI to use systems and new technologies.

For example, the early work of Karahanna and Straub (1999) on TAM tries to explain how the model of PU and PEOU was developed psychologically in determining individual CI to adopt and use technology. Therefore, the aim of the study was to trace the psychological origins of PU and PEOU in technology in human behavior. To facilitate such studies, an online survey with the aid of e-mail was used to gather information from 100 active electronic mail system users. Linear Structural Relation Modeling (LISREL) was used for the analysis and it was found that the intention to use e-mail system use is strongly determined by an individual's perception on its usefulness. However, they further argued that in psychological term, the social presence of the system and the social influence of an employee's supervisor at work; affect the perception of the usefulness.

Also, Rawstorne et al. (2000) carried out a quantitative research on predicting usage behavior of technology in a mandated environment. The study used TAM and TPB models to confirm the relationships that exist between the variables. A longitudinal survey study was carried out using an information system known as 'Patient Care Information System' that predict the behavior of the respondents (nurses). The final report of the study indicates that PU influences on the CI intention to adopt and use an information system.

Luarn and Lin (2005) conducted a research on a topic titled – Towards an understanding of the CI to use mobile banking. The aim of the study was to ascertain the determining factors that lead to mobile banking adoption. The study uses TAM with an extension of three additional variables. The variables consist of PU, PEOU, perceived credibility, perceived self-efficacy and perceived financial cost. Survey was adopted and questionnaire method with a sample size of 180 respondents. The finding of the research shows a significant relationship between PU and CI to adopt and use mobile banking.

In addition, Rouibah and Abbas (2006) studied on the Modified TAM for Camera Mobile Phone Adoption examined the determinants of camera phone usage in the Arab world. The study employed questionnaire method to collect data from 240 respondents been selected from Management Information Systems students in Kuwait University. Result from the study shows a positive relationship between PU of using a camera phone and its intention to use. In other words, PU strongly influences CI to use camera phone among the Arabs.

Wu et al. (2008) studied on examining health care professional intention toward technology adoption of *Adverse event reporting system* in a hospital in Boston USA. The authors were able to explore those determinants that lead to technology acceptance. The study was empirically tested using a survey research method with a sample size of 290 respondents chosen from 144 different hospitals. In addition, Structural Equation Modeling (SEM) was used to analyze the research model. It was found that there is a significant effect on the relationship between PU and CI intention to use the reporting system in hospitals and healthcare systems.

Furthermore, Sambasivan et al. (2010) studied on user acceptance of a Government to Business (G2B) e-procurement system in Malaysia. The study aimed at determining the factors that influence the intention and actual use of e-procurement system in the public sector. Both TAM and DeLone and McLean's IS success models were used with their established independent variables. However, an extension to the model was made with trust, facilitating conditions and web design quality variables. The findings indicate a positive relationship between PU and intention to use electronic procurement system.

The study of Oni and Ayo (2010) also tries to find out the factors that determine individual's CI toward e-banking use in Nigeria. An extended TAM was conceptualized that comprise the following variables: PU, PEOU, perceived credibility and CSE. Two hundred and ninety two active bank customers were randomly selected to fill in the survey questionnaires for the study. In addition, correlation analysis was used as the statistical tool in establishing the relationship

among the research variables. Accordingly, the result affirmed to the fact that PU is the most critical factor that influences customers' intention to use e-banking system.

Park et al. (2012) conducted a study on the CI to use mobile learning (m-banking) in Korean universities. The study extended TAM with additional three variables: self-efficacy, relevance and accessibility to evaluate the CI of using the m-learning system among students. Two hundred and eighty-eight (288) university students were selected to form the sample size of the study and Structural Equation Modeling (SEM) and Linear Structural Relationship (LISREL) were used to explain the relationships that exist between the variables. The findings showcase a strong and positive relationship between PU and CI to use m-learning among the university students.

Moreover, the work of Lai and Rushikesh (2012) was aimed at understanding the driven factors that influence university students use dedicated electronic devices for learning. In order to examine this, the authors adopted an integrated conceptual model that comprises of TAM and DIT to form and conceptualized a new model. The variables used in the new model were purposely made to determine the students' intentions are: PU, PE, compatibility and convenience. A quantitative approach using a questionnaire instrument was employed in the study. One hundred and thirteen students were randomly selected from various Taiwan universities to form the sample size of the study. After analyzing the data using Partial Least Square (PLS), it reveals that PU, as an extrinsic factor, significantly influences students' intention to use dedicated e-books application in universities.

In Nigeria, Tella and Olasina (2014) studied on the predicting behavior of users' continuance intention to use e-payment system. A combination of TAM and DeLone and McLean information system success model were synthesized to form an integrated model for the study. The variables that were used to determine the actual use intention and its continued usage include: PEOU, PU, enjoyment, speed, perceived benefits and perceived satisfaction. With the aid of survey questionnaires, data were collected from 250 respondents selected from both staff and student in a university. The findings indicate a positive correlation between perceiving usefulness and attitude towards usage, which in turns lead to intention to use.

Al-Mamary and Shamsuddin (2015) tested the TAM in the context of Yemenis telecommunication companies. The study employed questionnaire survey research method with a total sample size of 269 respondents. SEM was used for the analysis. The result shows a positive relationship between PU and system usage intention in the Yemenis telecommunication companies.

Recently, several studies have also revealed the relevance and influence of PU on CI in system use. For instance, the work of Prayoga and Abraham (2016) found that PU can positively predict user's intention to use IoT health device which is believed to have a great impact on individual health regulation. Similarly, the findings of Mou et al. (2016) has also revealed the significance of PU in influencing consumers' acceptance to use online health services both at initial and later stages of their purchase intention. Furthermore, the findings of Diatmika et al. (2016) have found that PU influences the CI to accept computerized AIS among individual employees that handles loan transactions in village credit institutions in Indonesia. Moreover, PU

has been confirmed to influence the acceptance and intention to use social networking media by both teachers and students in teaching and learning respectively (Elkaseh et al., 2016). In a related study, Shittu et al. (2016) have found that PU is an influencing factor that predicts Nigerian pre-service teachers' intention to use IT-related instructional materials in the classrooms.

As a conclusion, looking at the foregoing studies, it could be deduced that, what has been known in the previous studies is that PU has been found to influence individual acceptance, adoption and use of technology in almost all the studies reviewed. However, most of the studies were centered on voluntary use intention without considering intention or continuance intention of individuals working in organizations in which system use is mandatory. Therefore, a gap exists that need to be explored and known in order to understand how PU influences the continuous intention of employees' system use in mandatory user organizations.

2.11 Perceived Ease of Use

Perceived ease of use is described as the extent to which a person believes that using a particular system is free from effort (Davis, 1989). Previous studies had established that the individual's intent to use a system is due it eases of use. Perceived ease of use is a construct that assesses individual effort in the process of working with the system (Venkatesh, 2000). Also, in TAM, PEOU is hypothesized designed to have a direct effect on PU. This is because; the simplicity of using a system will definitely result to increased job performance for the user (Davis, 1989).

2.11.1 The Influence of Perceived Ease of Use on Continuance Intention

Several studies had been conducted on the relationship between PEOU and CI intention in technology adoption and most of the findings reported have either direct significant relationship between PEOU and CI or indirectly through PU. These studies include Saadé and Bahli (2005); Fu, Farn and Chao (2006); Hung, Chang and Yu (2006); Yaghoubi and Bahmani (2010); Suki and Suki (2011); Tsai, Wang and Lu (2011); Pai and Huang (2011); Terzis and Economides (2011); Chow, Herold and Chan (2012); Nasri and Charfeddine (2012); Huang, Sun, and Su (2016); Cigdem and Ozturk (2016); Abdullah, Jayaraman, Shariff, Bahari, and Nor (2016) and Chuang, Chen, and Chen (2016).

For instance, the work of Saadé and Bahli (2005) on the impact of cognitive absorption on both PEOU and PU in an online learning environment tried to examine a proposed internet based learning systems acceptance. All the variables in TAM were used with an extension of cognitive absorption variable serving as an intrinsic motivation to individual perspective. A survey questionnaire with 5-point Likert-type scale was used to collect data from 102 undergraduate students whose main major were from Accountancy, Management Information System, Finance and Marketing. In carrying out the analysis, PLS was used and yielded a result that shows an overall support and acceptance of the online-learning system among its users. However, the result indicates that cognitive absorption was not a strong antecedent to PEOU and thereby provides weak or less significant influence on CI. In other words, PEOU is not significantly strong in determining students' intention to use online-learning system in the universities.

Also, Fu, Farn, and Chao (2006) examined taxpayer's intention to adopt and use electronic filing (e-filing) system for personal income tax payment purposes. The study uses TAM and TPB theories to establish the relationship between technology acceptance variables and individual intention to use e-filing system. These variables used in the model are PU, PEOU, perceived risk, subjective norm, self-efficacy, resource facilitating conditions and technology facilitating conditions. Using a questionnaire-based survey with a total number of 59,166 respondents, the data were tested using SEM approach and the result shows that PEOU is not an issue of particular importance to the CI to use e-tax filing for older taxpayers. However, it is likely to influence taxpayer's intention to use e-filing system for new users.

In a similar study, Hung et al. (2006) identifies the determinants factors that influence the acceptance and use of government's online tax filing and payment system in Taiwan. The following variables of TAM composed the research model: PEOU, PU, perceived risk, interpersonal and external influences, self-efficacy compatibility, trust and facilitating conditions. Using a survey method of research, data was collected from a sample size of 1,099 taxpayers and equally SEM was employed to analyze the data. The result indicates a significant relationship between PEOU and intention to use e-tax filing and payment system among e-tax filing adopters. However, the result further shows that PEOU do not significantly influence attitude toward intention for non-adopters.

Yaghoubi and Bahmani (2010) conducted a study on the factors that affect the adoption of online banking. The study specifically examines the real factors that influence the adoption of e-banking of Isfahan province in Iran. A research model was

developed based on the TAM and TPB model and uses survey research method to extract data from 349 bank customers whom were randomly selected within the province. The analysis of the study was analyzed by using SEM and the overall findings confirmed the capability of the independent variables to influence individual intention to use online banking. However, the findings from the analysis indicates that PEOU does not have a direct influence on usage, except through PU and attitude which will in turn affects the acceptance of the online banking among customers.

Furthermore, Suki and Suki (2011) examine the relationship between PEOU, PE, PU, attitude and CI towards 3G mobile uses in Malaysia. The IS acceptance model adopted for the study was the TAM, but with an extension of PE variable. A sample of 100 respondents were served with survey-based questionnaires with a view to gather relevant responses that will enable the researchers to determine the key factors that influence the intention of 3G subscribers to use the service. Factor analysis, regression and correlation analysis were employed on the data that were collected and the result from the analysis indicates that all the variables, including PEOU are jointly accountable in determining the intention to use 3G mobile services among mobile phone users.

Similarly, Tsai et al. (2011) carried a study on using the Technology Acceptance Model (TAM) to analyze ease of use of a mobile communication system. The study is empirical and was aimed at predicting user acceptance of mobile communication technology pertaining to its ease of use. The research used TAM with an extension of two variables. The variables include PU, PEOU, perceived behavioral control, communication effects, attitude and CI. A sample size of 230 mobile communication

users was used for the survey as respondents. Generally, the results from the responses indicate that CI of users is greatly determined on how best these communication systems are designed to be simple and ease to operate by users. Therefore, PEOU in this study significantly influenced the attitude of users towards intention to use mobile communication system.

Moreover, Pai and Huang (2011) studied on technology acceptance in health care system which aimed at proposing a conceptual model that will test the willingness of adopting HeIS in health institutions. The study used a combination of DeLone and McLean IS model and TAM. The variables contained in these two models are: system quality, information quality, service quality, PU, PEOU and intention to use. For the purpose of analysis, SEM was used to analyze a sample of 366 respondents chosen from nurses, head of departments and directors in hospitals. The findings of the study conclude that both PEOU and PU significantly impacts individuals' intention to use health information system in hospitals.

Terzis and Economides (2011) conducted a research on the acceptance and use of Computer Based Assessment (CBA) system in learning environment. They used TAM and UTAUT IS models to examine the relationships that exist among the following variables viz: PU, PEOU, perceived playfulness, CSE, social influence, facilitating conditions, goal expectancy, content and CI. Their empirical work uses questionnaires to collect data from 173 first-year undergraduate students in Greece. Partial Least Square was employed and it was found that PEOU has a direct effect on CBA system use intention. In other words, PEOU significantly influenced the intention of CBA use among university students in Greece.

The study carried out by Chow et al. (2012) made an extension to TAM to explore the intention to use *online 3D Second Life* for enhancing healthcare education for learning. The study examines the factors that determine student's acceptance and use of *online 3D Second Life* for learning process. The variables used for the research are PU, PEOU, and CSE as independent variables while CI serves as the dependent variable. Survey method was used with a sample size of 206 nursing undergraduate students selected across all levels. The overall result of the study shows that *online 3D Second Life* is perceived to be useful by the student in their learning process and confident enough to use it. However, they were neutral with regards to its ease of use. In this respect, therefore, PEOU is not a determining factor for students' intention to use *online 3D Second Life* for learning process. This finding is in consonance with the study of Yaghoubi and Bahmani (2010) and Hung, Chang and Yu (2006).

Lastly, Nasri et al. (2012) conducted a research on the factors that affects the adoption of internet banking in Tunisia. The independent variables used for the research are PU, PEOU, security and privacy, self-efficacy, government support and technology support. Attitude, subjective norm and perceived behavioral control were used as interacting variables between the aforementioned factors and CI. The study employed questionnaire method as an instrument for data collection from the respondents. The respondents consist of 284 bank customers randomly selected from different banks in Tunisia. The finding of the study is consistent with that of Yaghoubi and Bahmani (2010); Hung et al. (2006); and Chow et al. (2012) as they affirm that PEOU does not have a direct significant towards CI to use but only indirectly through PU and attitude.

In recent studies, PEOU has also been found to influence CI of individuals either directly or indirectly through PU or attitude. For instance the finding of Chuang et al. (2016) indicates that PEOU has an indirect influence on individual CI through attitude. Whereas, Cigdem and Ozturk (2016) in e-learning system studies have found that PEOU has a direct influence on the intention to use multimedia instruction in learning and recommends that additional interactive features on the system will further simply its use and increase learners usage intention. Lastly, Abdullah et al. (2016) ascertained that hotels with information systems that have higher PEOU are more likely to influence online booking intention among customers.

In a nutshell, in reviewing the above studies, it was observed that there were mixed findings. While some studies have found direct influence of PEOU on CI, others are either insignificant or indirectly significant through PU or attitude. For example, the studies of Hung et al. (2006), Suki and Suki (2011); Tsai (2011); Pai and Hung (2011); Cigdem and Ozturk (2016) and Abdullah et al. (2016) have all confirmed that PEOU has a direct influence on CI to use a system or technology. However, all other studies that were reviewed have established that PEOU has no direct influence in determining intention except through PU or attitude. Therefore, in the first place, there a need to investigate the relationship between PEOU and CI with a moderating variable that may strengthen the relationship.

2.12 Perceived Information Quality

Information is the ingredient that most organizations relied upon for their effective routine operations and decision making (Ni & Khazanchi, 2009). It is on this ground that information is seen as the heart of an organization because of its crucial value in

the decision making process. Information has been defined by different scholars in different ways. Higgins (1999) defined information as a recognizable form of data. It was also defined as an organized and constructive form of processed data (James, 1998). In simple term, information can be explained as any formed of processed data that could aid in making decision. To this effect, therefore, having good information at the right time and in the right form is very important to all organizations in decision making. Moreover, information is seems not important until and unless is qualitative in nature. Quality of information entails its accuracy, timeliness, relevance, completeness and understandability to mention among others (Gable, Sedera & Chan, 2008). This is because, qualitative information is imperative in determining organizational success and achieving competitive advantage over competitors in business environments (Brown, 2004).

However, the issue of 'Quality' of information is a subjective norm that can only be interpreted by the person or group of persons that uses it (Strong, Lee, & Wang, 1997). It was also posited that information quality is solely dependent on the user objectivity as to what he/she is trying to achieve (Lillrank, 2003; Tayi & Ballou, 1998). Arguing in the same way, Klein (2001) also agreed that information quality in research is something that has to do with author's theoretical perspective. In addition, Wang and Strong (1996) explained information quality as something that is more or less fit-for-use. Also, information quality that perceived to be important by one person might not be necessary important to another person (Watts, Even, & Shankaranarayanan, 2009). This means that information quality characteristics might differ according to user's needs and aspirations. Hence, the need to explore more on information quality dimensions makes information to be qualitative in nature. This

has resulted in the development of many frameworks developed by various researchers with the aim of identifying information quality dimensions (Lee, Strong, Khan, & Wang, 2002). Nevertheless, many studies have shown that the quality of information is being measured based on its relevance, timeliness accuracy and understandability (Redman, 2004).

In accounting context, information quality can reflect on the quality of cost or financial reports it produces. By the way, account and audit staff are the users of AIS in which they rely on the information the system produces for their daily routine work processes and strategic decision making. Therefore, these categories of staff are the direct users of the system as they frequently depend on the system for executing their assigned duties and for this reason; they are in a better position to assess and evaluate the quality of information the AIS produces. Therefore, information quality is a vital factor that could influence the continuous use intention of a system among system users. In view of the foregoing arguments, it is apparent that information quality serves as a cardinal instrument for efficiency in operations that helps toward ensuring effective decision making in organizations.

2.12.1 The Influence of Perceived Information Quality on Continuance Intention

Perceived information quality is a construct in DeLone and McLean (2003) model, which is being used as a determinant that influences individual intention to use or continue to use a given system or technology. In view of this, many past studies in information system research have adopted this variable to predict usage intention at both individual and organization levels. Though, most of the studies that adopted this construct within the context of DeLone and McLean information system model are

associated with usage intention at organizational not individual level. However, the works of Halawi, McCarthy, and Aronson (2007); Chen and Cheng (2009); Gorla, Somers, and Wong, (2010); Petter and Fruhling (2011); Wang and Lu (2014); Hsu et al. (2015); Demissie, and Rorissa (2015); Milan, Bebber, and Eberle (2015); Rahman, Jamaludin, Mahmud, and Ghazali (2016) and Suryanto, Setyohadi and Faroqi (2016) have all examined the information system implementation from the individual perspective.

For instance, Halawi et al. (2007) conducted a study on assessing the success of knowledge management systems in organizations. The study used information quality, system quality and service quality as the independent variables. User satisfaction and intention were used as moderating variables on actual usage. A survey was conducted with a sample size of 300 respondents from 30 selected organizations and it was found that PIQ significantly influenced individual intention to adopt new technology.

Similarly, Chen and Cheng (2009) developed a comprehensive model that decomposes the ‘use’ construct in DeLone and McLean model into ‘intention to use’ and ‘actual use’ in understanding online shopping intention by consumers. The independent variables used for the study are information quality, system quality and service quality. On the other hand, intention to use and satisfaction serves as the intervening variables between the independent variables and the dependent variable (actual use). An online survey was conducted which yielded 331 responses all chosen from heavy traffic portals and other top shopping sites. The findings of the study

revealed a strong relationship among the variables which revealed among others the significant influence of information quality on intention to use.

Also, Petter and Fruhling (2011) conducted a study that explores the success of an emergency response medical information system (a system that was developed to aid laboratory technologists of public health institutions in disease diagnoses) among its users. In order to establish the extent of the system's success, DeLone and McLean model was used with an extension of a mediating and independent variables for individual impact and organizational impact respectively. In addition, an online survey questionnaire was employed for data collection purposes with the whole population of users as its sample size. Finally, the results of the study showcase that in totality, the information quality, system quality and service quality have a positive impact on both user intention and user satisfaction and interestingly the overall organizational impact of the system is influenced by individual usage impact.

Furthermore, Wang and Lu (2014) developed an extended model of DeLone and McLean with mediating variables of perceived product complexity and trust so as to determine the success of online insurance websites. In establishing support to the model, the study employed online survey method and received responses from 270 online insurance customers. The findings from the research revealed that while perceived product complexity, trust and satisfaction significantly affects consumer re-purchase intention, information quality and system quality in turn, affects both product complexity and trust. Furthermore, the result shows that consumer re-purchase intention is indirectly influenced by information quality of the system.

Hsu et al. (2015) conducted a study that aimed at investigating how the qualities of Enterprise Resource Planning (ERP) affect its post-implementation success from the users' perspective. DeLone and McLean's IS model was used to examine the relationships among the study variables. To empirically support the findings of the research, data were collected from 151 Enterprise Resource Planning (ERP) users and found that ERP post-implementation adoption success was significantly affected by the independent variables (information quality, system quality and service quality) with relation to user satisfaction. It was also established from the findings that the post-implementation success of ERP has greatly induced employees' usage intention of the ERP.

Moreover, recent studies in IS have established that information quality is perceived to have significant influence on individual intention to use a system or new technology. For example, the study of Denissie et al. (2015) has established the fact that information quality of a system significantly influences the CI to use '*Learning Community Management System'* among parents for better interactions. The work of Milan et al. (2015) made a prediction of the significant influence of information quality on online purchase intention. Additionally, Rahman et al. (2016) studied on how users PIQ in a digital library environment. A survey with the aid of a questionnaire has been used to source for the information from 534 respondents selected from some of the Malaysian intensive research universities. The result indicates that information quality significantly influence the intention to use digital library among its users, because of its reliability, relevance and accuracy. Lastly, the study of Suryanto et al. (2016) had also revealed the significant influence of

information quality on user intention to re-use *Employee Management Information System* in universities.

The review of literature above has revealed several findings from various studies indicating the usefulness of information quality as a factor that is being used to ascertain the CI and the continuous intention in system use, which are mostly found in organizations. Information system researchers have used DeLone and McLean information system success model to evaluate system success from the perspective of both individual and organizations. Studies have shown that information quality as one of the characteristics of IS has a significant influence toward individual use intention and satisfaction for new and old users respectively. However, looking at the above studies, rarely do researchers investigate the aspect of information quality on AIS components. Most of the past studies have concentrated on finding out the influence of information quality on business and other consumer-oriented systems, but this study dwelled on government-oriented organizations such like the federal hospitals in Nigeria. For this reason, this study tries to close the existing gap with a study that investigates the significant influence of accounting information quality in public sector organizations. In this regard, this study will seek to find employee individual perspective on the quality of information the system produces, in terms of its relevance, accuracy, timeliness and other attributes that the system was meant to fulfill.

2.13 Perceived Enjoyment

Perceived enjoyment is defined as the extent of pleasure a person derived as a result of using a system. It is a factor that is believed to influence user's intention in the

continued use of system or technology (Davis, Bagozzi, & Warshaw 1992). In addition, the concept of PE is serving as an intrinsic motivation which could aid in determining individual CI in the work place (Davis et al., 1992). In other words, it was the concept of hedonic motivation that was transformed to PE in the literature as a significant predictor of technology acceptance (Koenig-Lewis, Marquet, Palmer, & Zhao 2015).

2.13.1 The Influence of Perceived Enjoyment on Continuance Intention

Several studies were conducted on how PE influences CI in technology use. These past studies include the works of Igbaria, Livari and Maragahh (1995); Teo, Lim and Lai (1999); Pikkarainen, Pikkarainen, Karjaluoto and Pahnila (2004); Sun and Zhang (2006a); Lingyun and Dong (2008); Alenezi, Abbdul Karim and Veldo (2010); Teo and Noyes (2011); Premchaiswadi and Porouhan (2012); Wang et al. (2012); Xiang, Jing, Lee and Choi (2014) and Buettner (2015).

For example, Igbaria et al. (1995) studied on why individuals use computer technology? The study critically investigates the motivating factors that drive individuals to accept and use computer technology. Perceived enjoyment and PU variables were regarded in the study as intrinsic and extrinsic motivation that determines individual behavior respectively. Survey questionnaires were administered to 450 staff from various companies in Finland and empirical evidence from the study shows that PE is positively correlated with the usage intention among employee in organizations. In other words, employees adopt computer technology because they are enjoyable when working with them. Moreover, looking at it in another perspective, with regards to demographic data, the result indicates that age and gender were found

to have an adverse effect on PE as it was found that old age people and males have lower levels of enjoyment when using computer.

Similarly, Teo et al. (1999) conducted a study on intrinsic and extrinsic motivation toward internet usage. The research used PU, PEOU and PE as the independent variables for the research, whereas internet usage serves as the dependent variable. The findings from the study indicate that both PU and PE positively affect the intention to use the internet. In addition, the result further indicates that PE is more positively related to frequency of internet usage. The results produced came from the responses of a website online survey that was carried out on internet users for a period of two months. Moreover, the findings of this research had supported the work of Igbaria et al. (1995) and Pikkarainen et al. (2004).

Also, Pikkarainen et al. (2004) carried out a study on consumer acceptance of online banking in Finland. The aim of the study was to investigate the acceptance behavior of online banking in the context of TAM with some extensions to the original model. The independent variables used in the research are PEOU PU, PE, online banking awareness, security and privacy and quality of internet connectivity while the dependent variable on the other hand, is online banking adoption. Survey questionnaires were used for data collection and 268 respondents participated in the exercise, cutting across individuals with different backgrounds that have at least an account with a bank. The finding of the study shows that PE is statistically significant to online banking adoption among bank customers in Finland. The findings of this study supported the result of Igbaria et al. (1995) but contradicted the findings Teo et al. (1999) on computer usage intention and internet use respectively.

Furthermore, Sun and Zhang (2006a) carried out a study on the causal relationship that exists between the PE and PEOU. The study adopted an alternate statistical approach that investigates the casual relationship between the two constructs in some user technology acceptance researches. The study mainly focused on these two variables, nevertheless, both were depending on CI of users in the use of technology. An online survey was conducted with a total of 363 respondents consisting of employees and university students who were asked on two different subjects and technologies. Partial Least Squares was used to evaluate the structural models and Cohen path analysis was introduced to investigate the causal relationship. Contrarily to many researches, the results show that PE is not directly significant to CI, but rather, it only has a significant impact on PU. Therefore, this finding has contradicted the works of Igbaria et al. (1995), Teo et al. (1999) and Pikkarainen et al. (2004).

On the other hand, Lingyun and Dong (2008) suggested an extension of the classical TAM with other variables such as PE, social presence and trust in B2C e-commerce with a view to examine the relationship between those independent variables and the dependent variable - CI to adopt online shopping. Even though the study was not empirical, but at least, the conceptualization of the model gives room for further research to be carried out to test the proposed relationships in the model.

Alenezi et al. (2010) conducted an empirical investigation that aimed at investigating the role of computer anxiety, internet experience, CSE and enjoyment in students' intention to use electronic learning (e-learning) in Saudi Arabia. The independent variables of the research consist of PEOU, computer anxiety, internet experience, CSE and PE. The study employed a survey method through which data were collected

from a sample size of 408 students of various universities in Saudi Arabia. In addition, a stepwise regression and correlation analyses were performed to establish the relationships that exist within the research variables. The result indicates a significant relationship between PE and students' intention to embrace e-learning in Saudi Universities. By and large, PE is a significant factor that motivates or influences e-learning students' intention.

Also, in teaching and learning environment, Teo and Noyes (2011) assess the impact of PE and attitude among pre-teachers with the intention to use new technology in teaching. The study is aimed at examining the influence of PE towards technology adoption among pre-service teachers. Perceived usefulness, PEOU, and PE as an external variable to TAM were used as the independent variables, while attitude toward the use and intention to use serves as the moderating and dependent variable respectively. The research employs SEM as its tool in developing a model that portrays the relationships that exist among the variables in the research model. In addition, one hundred and fifty-three (153) pre-service teachers in Singapore were served with online survey questionnaires and thus they form the sample size of the study. After the statistical analysis on the data collected, it was found that PE had a significant influence on users' intention in the technology use. In other words, PE influences the intention to adopt a new technology in pre-service teachers in Singapore.

Similarly, Premchaiswadi and Porouhan (2012) tried to identify the factors that influence passengers' intention to use electronic airline ticketing. With the help of other theories of behavioral intention theories within the IS acceptance research field,

the author was able to combine the constructs in these theories and formed an integrated model that investigates the factors that motivate passengers to transact via e-ticketing. The independent variables that were measured against the CI were as follows: performance expectancy, effort expectancy, social influence, facilitating conditions, perceived security and PE. Price and time saving were used as mediators. Survey questionnaires were administered 86 to AirAsia airline passengers at the domestic departure's wing of Suvarnabhumi International Airport (SIA) in Thailand. Descriptive statistics and correlation analysis were employed and the result indicates that the PE has a positive effect toward use intention of electronic airline ticketing by passengers. In other words, the quest for passengers' intention to use airline e-ticketing tend to increase as they perceived its enjoyment.

The study of Wang et al. (2012) critically examines the individual differences of individual antecedents of PE and its influence on blogging use intention among students. In order for the research to critically observe individual PE, the independent variables were categorized into two. The first category consists of big personality traits – extraversion, agreeableness, conscientiousness, neurotism and openness to experience. On the other hand, the other category consists of variables on individualism - CSE and personal innovation in IT. Perceived enjoyment serves as a mediating variable between these two categories of independent variables and the intention of blogging which serves as the dependent variable. Survey method was used to collect data from a sample size of 358 students who were selected from seven universities in Taiwan. A critical analysis with SEM on the data collected yielded a result that shows PE mediate and influences the intention of blogging in learning

process among university students. This result supports the findings of Igbaria et al. (1995); Pikkarainen et al. (2004); Teo and Noyes (2011).

Furthermore, the work of Xiang et al. (2014) affirmed with the findings of many previous researches on the positive influence of PE towards intention to adoption and use of technology. The study had examined and explored the difference in individual user acceptance of applications used in hedonic and utilitarian smartphones. The independent variables used for the study were PEOU, PU, PE and perceived risks. On the other hand, as usual, CI is the dependent variable. In order to collect the responses of the respondents, online survey questionnaires were administered to 394 university students that use smartphone applications in South Korea. In analyzing the collected data, SEM was used and the findings indicate, as expected, PE is a strong determinant of intention to use both smartphones and hedonic-oriented phones.

In addition, the finding from the works of Buettner (2015) shows a positive correlation between PE and CI. The research was purposely carried out to empirically evaluate a new concept termed 'Bring Your Own Device Dataset'. An extended TAM was conceptualized to incorporate other independent variables to form a new model called 'Personal Information Technology Acceptance Model'. The study employed online-based questionnaire with 171 participants. The participants are employees working in different sectors with varying individual characteristics. SEM was employed for statistical analysis and it was found that there is a stronger correlation between PE and usage intensity more than PE and intention to use. Therefore, this finding had deviated from many previous researches such as Igbaria et al. (1995), Teo

et al. (1999) and Pikkarainen et al. (2004), but to some extent, it had supported the findings of Sun and Zhang (2006a).

In conclusion, the critical review of the above studies has provided a basis for understanding the influence of PE on individual CI among IS users. In essence, majority of these studies have established significant relationships of PE on individual intention in the use of technology. Thus, it is assumed that excitement and enjoying what someone uses either at home or at work contributes positively to use intention. However, most of the reviewed studies were carried out in volitional (voluntary usage) situation with a few studies in the mandatory use environment and as such, a gap exists which needed to be filled. Even though TAM has been widely used for voluntary use of technology and is dominant in investigating self-reported usage behavior, however, there are still studies that were conducted and found TAM useful in understanding the technology usage behavior in a mandatory setting by exclusion of the attitudinal construct from the model (King & He, 2006). Likewise, in this study, TAM is deemed fit with the inclusion of PE to use for IS use mandatory settings where all employees are required to use the system without option. It is based on this that this study investigates the mandatory usage behavior of eCS users in Nigerian federal hospitals. For this reason, it is important to observe and establish the relationship that exists between PE and CI to use eCS system in Nigerian federal hospitals.

2.14 Computer Self-efficacy

Computer self-efficacy refers to judgment of one's capability to use a computer (Compeau & Higgins, 1995). It does not matter with the past, but rather with the individual's judgment of what could be done in the future (Hayashi et al., 2004).

Computer self-efficacy is a variable that has been used in IS to explain user perception with regards to his/her ability to use computers and other IT gadgets in the performance and accomplishment of job tasks (Compeau & Hinggins, 1995). In the first place, the concept of self-efficacy can be traced back to the work of Bandura (1986) explaining self-efficacy as the belief that an individual is capable of performing a particular behavior. It is also seen as one's belief in his or her capabilities to cope, perform and thrive to accomplish a given task or achieve a desired goal (Jain & Jain, 2013). Self-efficacy also refers to the perception of an individual has on the level of ease or difficulty attached to a task or career (Potgieter, 2012). Therefore, self-efficacy is seen as an important variable that plays a great role in individual behavior and motivation (Igbaria & Iivari, 1995).

Moreover, self-efficacy represents an important individual trait, which moderates organizational factors, technological factors and individual factors on an individual's intention to use IS (Compeau & Higgins, 1995; Hayashi, Chen, & Ryan, 2004). Thus, CSE was derived from the theory of self-efficacy and found to exert a significant influence on individual's expectations of the outcomes of using computers, their emotional reactions to computers, and their actual use. It was also found to play a great role in molding individual's mind and behavior toward intention to use technology. Therefore, CSE is defined as one's belief about his/her ability to perform a specific task or job using a computer (Johnson & Marakas, 2000).

2.14.1 Studies on Computer Self-efficacy

The relationship between IS usage intention and CSE had been extensively examined in the work of Compeaua and Hinggins (1995). In their study, three dimensions of

CSE were drawn. These are magnitude, strength and generalization. According to them, magnitude refers to the level of capability from an individual in performing a task with computers. Strength is the extent of confidence a person has in accomplishing tasks with computers. Generalizability on the other hand, refers to the capability of an individual to complete assigned computing tasks using different platforms and or software. In view of this, CSE is a measure that can be used to determine the capacity of an individual's intention to accept and use computers in executing job tasks.

On the other hand, Cassidy and Eachus (2002) have established a relationship between CSE and experience. They argued that people with previous computer experience tend to have higher self-efficacy with regard to computer use. Similarly, other studies reported that gender difference is also a factor that determines CSE of individuals. It was found that males tend to have higher self-efficacy more than the female (Miura, 1987).

The study of Lewis, Agarwal and Sambamurthy (2003) aimed at examining the factors of individual beliefs on the use of technology. Perceived ease of use, PU and CSE were used as the independent variables on a sample 229 academic faculty members. The result shows that CSE is among the significant factors that influence individual belief to use a new system of technology.

Wangpipatwong, Chutimaskul, and Papasratorn (2008) examine the factors that influence the continuance intention to use electronic government websites among citizens in Thailand. Technology Acceptance Model was used as the theoretical model

with an extension of CSE variable. Also, web site survey was employed to empirically test the research model. The survey consists of 614 participants that are knowledgeable and had an experience with government related websites. The findings from the regression analysis revealed that, all the variables, including CSE influenced citizens' intention or continue to use e-government websites.

Also, John (2013) conducted a study that identified the antecedents and the effects of CSE on individual intention toward computer use in social media networks. Perceived usefulness, computer anxiety and CSE are the independent variables measured against individual intention to use social networking sites. Survey method was employed with 255 respondents selected from Bangkok metropolitan areas to gather the necessary data for the analysis. The result revealed that previous computer knowledge and experience significantly influenced individual intention to use social network sites. Also, CSE was found to be indirectly influencing intention to use the sites.

Furthermore, Ariff et al. (2013) examines the effects of CSE on the CI to use internet banking among potential youths in Malaysia. In order to establish the relationship extended TAM and CSE as independent variable was used. Data were collected from 222 undergraduate students at a public university and analyzed using regression analysis. The results showed that while PU, PEOU and perceived credibility, directly affects CI; CSE on the other hand, indirectly affects CI towards internet banking use. In other words, all the constructs used in the research have significant influence on users' CI to use internet banking technology.

2.14.2 Rationale for Computer Self-efficacy as a Moderator

Firstly, several studies continue to call for the inclusion of some moderating factors in TAM (Lucas & Spitler, 1999; Venkatesh et al., 2003). Also, Agarwal and Prasad (1998) explicitly criticized the absence of the moderating factors in TAM and called for further research that could investigate the moderating effects on the existing relationships in TAM. This was the product of some studies such as Venkatesh et al. (2003) that tested eight models and found that the predictive validity of six of the eight models significantly increased after the inclusion of moderating variables. They also argued that it is clear that the extensions (moderators) to the various models identified in previous research mostly enhanced the predictive validity of the various models beyond the original specifications (Lingyun & Dong, 2008).

Secondly, inconsistency in research findings has permitted the inclusion of moderators (Frazier, Barron, & Tix, 2004; Barron & Kenny, 1986). In their study, Sun and Zhang (2006b) established that all the prior studies that predict the relationships between TAM variables (PU and PEOU) and intention were not completely consistent and thereby recommends for inclusion of moderating factors.

Thirdly, Sun and Zhang (2006b) argued that though TAM was one of the most successful models in IS research, its explanatory power is still limited. In this regard, Venkatesh et al. (2003) compared eight user acceptance models of explanatory power. Their longitudinal studies showed that these models exhibited explanatory powers in the neighborhood of 40%. That is, these models can explain around 40% of variances in user CI. As such, further studies were recommended to add moderating variables with a view to increase the explanatory power of the models.

Therefore, in this study, CSE is used to moderate the relationship between PU and CI and the relationship between PEOU and CI with regard to eCS use in Nigerian federal hospitals. The rationale behind the choice of CSE as a moderator is borne out of the fact that previous studies have established positive relationships between CSE and PU, and same with CSE and PEOU. For example, the studies of Wangpipatwong et al. (2008) revealed that CSE positively influenced PEOU of e-government web sites among citizens. Also, John (2013) found that PU of a system or technology to an individual is greatly been influenced by his CSE. Arguing the same line, Hayashi et al. (2004) declares that CSE has a significant effect on the individual PU of a system. It is based on this that the study finds it appropriate to investigate the moderating effects of CSE between these two variables and the dependent variable to bridge such existing gap in the literature.

2.15 Conclusion

The chapter had extensively discussed the basic concepts that were used in the study. Equally, in the quest to apply the relevant underpinning theory to the study, the chapter had extensively reviewed all the existing technology acceptance theories that are being used frequently in IS research. An extensive review of past literature that explained the findings on the relationships between the research variables was also carried out. The chapter ends with a notion that significant studies have been conducted around the globe with relation to technology adoption studies and found that factors such as PU, PEOU, PIQ and PE are among the factors that influence CI to use IS and/or technology. However, there are recommendations by scholars that moderating variables should be used to moderate the relationship between those factors in order to bridge the gap that exist in some of the relationships.

CHAPTER THREE

CONCEPTUAL FRAMEWORK AND HYPOTHESES DEVELOPMENT

3.1 Introduction

In the previous chapter, relevant literatures related to the research are thoroughly reviewed and analyzed with a view to understand what has been done and what need to be done. The review and selection of an appropriate model in chapter two had assisted in the conceptualizing the study framework and this provides the foundation on which the hypotheses were formulated in accordance with the research objectives. The conceptual model of this study is an extension on the original TAM.

3.2 Conceptual Framework

A research framework is the foundation upon which the research study is laid upon. It is the theoretical assumptions that bind together the concept of an idea among variables under study (Sekeran & Bougie, 2013). In view of this, the conceptual framework of this research work is developed and proposed to test the relationship between the dependent variable - CI and the independent variables - PU, PEOU, PIQ, and PE). It also investigates the extent of the moderating effects of CSE on the influence of PU and PEOU on CI to use eCS in Nigerian federal hospitals. The test for moderating effect of CSE on the relationship between the two independent variables (PU and PEOU) and the dependent variable as explained in chapter two was theorized from previous findings that revealed the significant relationships that exist between these two TAM variables and CSE (John, 2013; Wangpipatwong 2008; Hayashi et al., 2004). Also, there have been inconsistent findings in the previous

studies which provide the basis for introducing a moderating variable to strengthen the relationships between PU and CI and PEOU and CI (Sun & Zhang, 2006b).

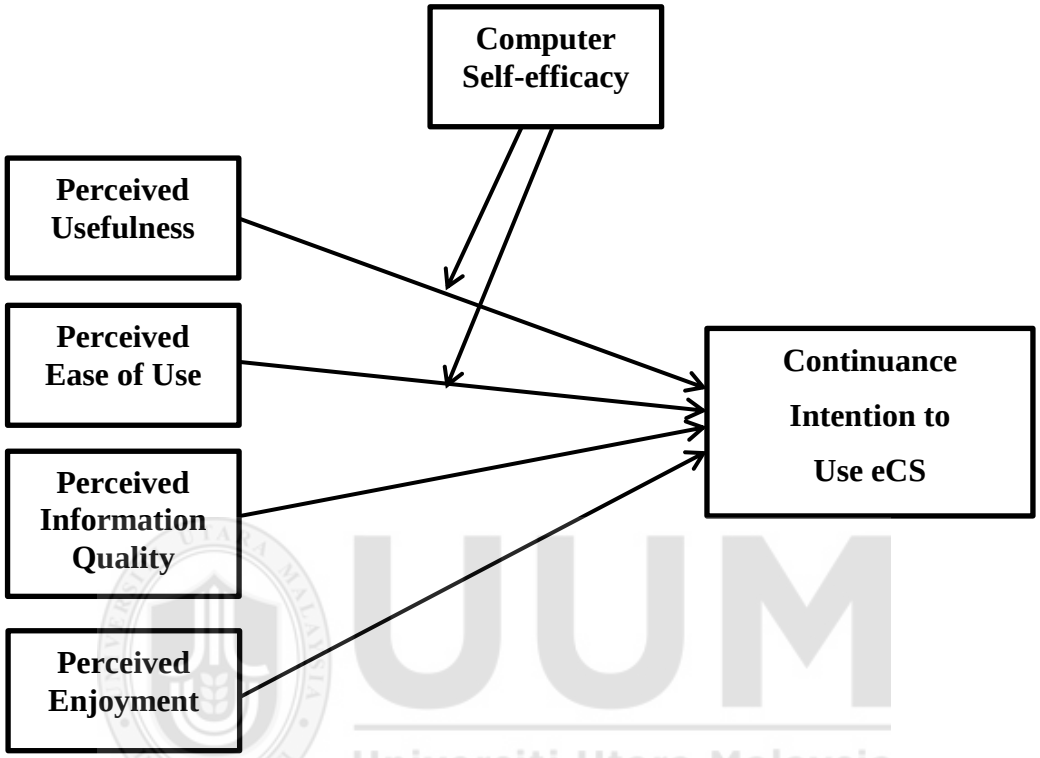


Figure 3.1
Research Framework

Based on the conceptual framework of this study in Figure 3.1 above, the combination of the independent variables (PU and PEOU) from TAM, PIQ from DeLone & McLean IS success model and PE from Compeau and Higgins model were chosen to reflect their appropriateness in explaining individual CI to use an information system which is ably represented by the eCS being used in Nigerian federal hospitals (Abbasi et al., 2013; Davis et al., 1992; DeLone & McLean, 2003).

The choice of PU and PEOU from TAM is justified because of the documented explanatory power and parsimony of the model and most importantly, its prominent use among IS researchers across the globe (Abbasi et al., 2013). In addition, TAM has been used in various fields of studies that relates to individual use of technology and proved to be effective in predicting the intention behavior of users (Legris, et al., 2003). However, depending on the nature and the phenomenon under study, the model could be extended to better explain the relationships that exist among the study variables (Gu, Lee, & Suh, 2009). For this reason, TAM was extended to incorporate 'information quality' variable from DeLone and McLean IS success model. In this study, information quality explains the perception of users on the quality of accounting information being produced by eCS to the management for routine inspection, control and managerial decision making. Equally, DeLone and McLean IS success model has been widely used and proven to be effective in determining the continuance use intention of system among individuals, system success and end-user satisfaction in organizations (Wang & Lu, 2014; Teo et al., 2008; Lin, 2008; Petter et al., 2008; Wu & Wang, 2006).

Furthermore, PE has been found in past studies to influence the continuous intention of individuals to use technology voluntarily. However, past studies were limited with regards to assessment of PE for mandatory IS use environment. It is based on this fact that this study attempts to investigate its influence on continuance use intention of eCS in Nigerian federal hospital. Succinctly put, this examination will provide an insight into the motivational psychology of public sector employees working in Nigerian federal hospitals with regards to IS use.

Based on the above discussion, this study finds it appropriate in conceptualizing the research model based on aforementioned variables. In a nutshell, PU describes the perception of eCS users on the with regards to its importance in executing job tasks. On the other hand, PEOU determines the extent of believing that eCS is easy to use and operate. Perceived information quality is equally important in predicting the CI to use eCS as it explains the degree of individual perception on the quality of financial report the system produces in terms of the accuracy, timeliness and relevancy of the reports to the management. Lastly, PE is a factor that measures the pleasure and enjoyment derived from using eCS at the workplace.

3.3 Hypotheses Formulation

Based on the above conceptual framework in figure 3.1, the hypotheses were formulated in line with the relationships depicted on the research framework.

3.3.1 Perceived Usefulness

Perceived usefulness refers to the degree of an individual's believe that a system will enhance his or her job task (Davis, 1989). Technology acceptance model has confirmed the significance of PU in influencing CI in the model and several studies had validated this assumption (Luarn & Lin, 2005; Rouibah & Abbas, 2006; Wu, Shen, Lin, Greenes, & Bates, 2008; Sambasivan et al., 2010; Oni & Ayo, 2010; Park et al., 2012; Lai & Rushikesh, 2012; Tella & Olasina, 2014; Al-Mamary & Shamsuddin, 2015). For example, the works of Rawstorne et al. (2000) affirmed the positive relationship that exists between PU and intention to use 'Patient Care Information System' among nurses in hospitals. Similarly, the studies of Wu et al. (2008) found a significant relationship between PU and CI intention to use 'Adverse

event reporting system' - a new technology that was introduced in USA hospitals for healthcare professionals for reporting purposes. In the same vein, the relevance of PU was also buttressed in the e-government platform within the public sector as it was found that PU influences the intention to use e-procurement in public sector institutions (Sambasivan et al., 2010).

In learning environment, PU is found to be the most influential factor that determines the acceptance and use of e-learning systems. This is evident from the work of Park et al. (2012) which was conducted to examine the CI of students to use m-learning systems. This is in line with the findings of Lai and Rushikesh (2012) that PU as an intrinsic factor, significantly influences student's intention to use dedicated electronic books applications in universities.

In e-banking systems, the study of Oni and Ayo (2010) has established the significant influence of PU on CI to use e-banking system among bank customers in Nigeria. Lastly, a recent study of Diatmika et al. (2016) has empirically proved that PU is an influential factor on behavioral use intention in most AIS oriented organizations.

Looking at the foregoing studies, it is expected that PU would be significant in influencing eCS users' intention. This is because, users could perceive its usefulness in terms of increased efficiency and new skills that might be gained from using it. Therefore, based on the above presumptions, the below hypothesis is formulated:

H_1: *Perceived usefulness significantly and positively influences continuance intention to use e-collection system in Nigerian federal hospitals.*

3.3.2 Perceived Ease of Use

In several studies that adopted or adapted TAM, it has been confirmed that PEOU has a significant influence on CI of an individual to use a system. Despite the conflicting findings from some of the previous studies, however, the majority of these studies have established the significant influence of PEOU on CI (Suki & Suki, 2011; Tsai, Wang, & Lu 2011; Pai & Huang, 2011; Terzis & Economides, 2011). For instance, the work of Pai and Huang (2011) shows that PEOU is found to be a determinant on individuals' CI toward the use of 'healthcare information systems' by nurses, head of departments and other staff working in the hospitals.

Also, in examining the taxpayer's intention to use e-filing system in tax payments, Fu et al. (2006) and Huang et al. (2006) agreed to the fact that there is a significant relationship that exists between PEOU and intention to use e-filing systems. Similarly, PEOU is seen as an influencing factor that contributes immensely towards the acceptance and use of technology in e-learning systems. This is because, evidences have shown that PEOU significantly influences individual intention to accept and use 'Computer-based Assessment' in learning environment (Terzis & Economides, 2011) and the use of 'online 3D Second Life' software for learning process in the field of healthcare education (Chow et al., 2012). Contrarily, Saadé and Bahli (2005) established a significant relationship between students' intention and PEOU in using online systems for learning purposes. Arguing the same line, the study of Yaghoubi and Bahmani (2010) revealed that PEOU does not significantly influence users' intention in the use of internet banking. In a related study, Nasri et al. (2012) could not find any significant relationship between PEOU and internet banking usage. Nevertheless, other studies such as Suki and Suki (2011) and Tsai et al. (2011)

affirmed that PEOU significantly influences individual CI towards the use of mobile communication systems. Considering the relationships highlighted above, it is believed that eCS users might firmly agree to the fact that the system is not difficult, but easy to operate in the performance of their assigned duties. This is because, operating manuals, in-house system training and technical assistance are available to guide and help the end-users. Therefore, based on above presumptions the below hypothesis is formulated:

H_2: *Perceived ease of use significantly and positively influences continuance intention to use e-collection system in Nigerian federal hospitals.*

3.3.3 Perceived Information Quality

Perceived information quality is the most valuable among the three constructs in DeLone and McLean IS success model. As such, PIQ is an independent variable that is familiar and commonly used in IS research field. It is an independent variable that measures the information attributes of a system in terms of its accuracy, timeliness, relevance, completeness and understandability (Redman, 2004). Also, PIQ had been used in many IS research to measure individual or organizational intention, satisfaction and/or continuance use of a system (Lee et al., 2002). For this reason, several studies have used PIQ construct to measure the aforementioned attributes and predict individual intention toward system use. For example, Halawi et al. (2007) had tested the relationship between PIQ and individual intention in knowledge management and found a significant relationship. Also, Chen and Cheng (2009) conducted a study on consumers' online purchase and found that PIQ has significantly influenced consumers' re-purchase intention via online. Similarly, the work of Wang and Lu (2014) also revealed a significant relationship between system's PIQ and

online repurchase intention among web-based insurance consumers. In addition, Petter and Fruhling (2011) examine the success of a laboratory IS in hospital and established that PIQ has a positive impact on user intention in system's continuance use. In view of the foregoing studies, it is assumed that PIQ is significant in influencing the continuance intention of employees to use eSC in Nigerian federal hospitals. This assumption is made because of the expectation that end-users of eCS are familiar with the benefits associated with the system's reporting method in terms of accuracy, timeliness and relevance. Based on the above presumptions, the below hypothesis is formulated:

H_3: *Perceived information quality significantly and positively influences continuance intention to use e-collection system in Nigerian federal hospitals.*

3.3.4 Perceived Enjoyment

Previous studies have reiterated the role of PE in influencing user's continuance intention in the use of a system or technology, which could be as a result of person's affection and love of technology, especially in voluntary usage. According Davis et al. (1992), PE is an intrinsic motivation that can influence individual intention to continue the use of a given system or technology. Therefore, PE enables people, have fun when using a system. In view of this, PE is a determinant for consideration in IS studies that determine or influences CI. It is based on this that previous studies in IS examined the possible relationship that exits between PE and CI.

Evidently, findings from past studies revealed that there is a significant positive and significant relationship between PE and CI in the use of technology. Similarly, other studies (Teo, Lim, & Lai, 1999; Pikkarainen et al. 2004; Alenezi et al. 2010; Teo &

Noyes, 2011; Premchaiswadi & Porouhan, 2012; Wang et al. 2012; Xiang et al. 2014; Buettner, 2015) have all found significant relationships between PE and CI. For instance, Igbaria (1995) and Alenezi et al. (2010) conducted a study on investigating the influence of PE on CI to use computers at the workplace and for learning purposes respectively. Both findings indicate positive relationships between the research variables under study. In similar studies, PE was found to impact on users' intention toward the use of electronic teaching and learning systems among teachers and students respectively (Wang et al., 2012; Teo & Noyes, 2011).

On the other hand, Sun and Zhang (2006a) in an empirical study conducted on investigating the causal relationship that exists in technology adoption studies claimed that PE is not significantly related to the CI in the use of technology. Contrary to this, the work of Premchaiswadi and Porouhan (2012) had provided evidence to prove that there is a positive relationship between PE and CI to accept electronic ticketing and use for both booking and payment purposes. Moreover, PE is a determining factor that influences usage intention of mobile smartphones among university students (Xiang et al., 2014). Therefore, looking at these previous studies, it is assumed that, PE is also an influencing factor that induces hospital employees to use eCS in the course of executing job tasks at the workplace. It is expected that users will find it pleasurable and excited to use due to its internet connectivity that can allow users have access to use social media platforms and downloads at free cost. Therefore, based on the above deductions, the below hypothesis is postulated:

H_4: *Perceived enjoyment significantly and positively influences continuance intention to use e-collection system in Nigerian federal hospitals.*

3.3.5 Computer Self-Efficacy, Perceived Usefulness and Continuance Intention

Self-efficacy is an intrinsic factor that determines the perception of an individual toward performing a particular behavior (Potgieter, 2012). As such CSE is defined as the extent of believe an individual on his or her capability to perform a specific task using computers (Johnson & Marakas, 2000). Compeau and Higgins (1995) were the initial inventors of CSE in research model that predicts individual outcomes through the use of computers. Similarly, other related studies have established significant relationships that exist between CSE and CI among individual system users (Ariff et al., 2013; Wangpipatwong et al., 2008; Venkatesh et al., 2003). Furthermore, it was found that CSE has a positive influence in determining end-user intention among system users (Al-Mamary and Shamsuddin, 2015; Park et al., 2012; Oni & Ayo, 2010). Hayashi et al. (2004), has found that system users with higher CSE have a higher PU of the system. Conversely, those with lower CSE will have lower expectation about the usefulness of the system and therefore affect their intention to use the system. In this regard, it is assumed that CSE can moderate the relationship between the PU of eCS and the CI to use by its end-users. Therefore, based on the foregoing presumptions, the following hypothesis is stated:

H_5: *Computer self-efficacy moderates the influence of perceived usefulness on the continuance intention to use e-collection system in Nigerian federal hospitals.*

3.3.6 Computer Self-Efficacy, Perceived Ease of Use and Continuance Intention

Perceived ease of use is a variable that has been developed in TAM to predict the CI of individuals to use a system. It has a significant effect on CI because of the perceived simplicity in its operation (Sambasivan et al., 2010). Since its development, PEOU has been established to have significant impact on CI. Though, most of the

findings in prior studies were statistically significant, but not all are consistent (Sun & Zhang, 2006b). As such, it was suggested that some factors may be used to moderate the relationship between PEOU and CI (Schepers & Wetzels, 2007; Sun & Zhang, 2006b). In response to that, technological factors, organizational factors and individual factors such as the complexity of the system, voluntariness and age respectively, were used among others to moderate between PEOU and CI (Sun & Zhang, 2006b). Therefore, CSE has been selected in this study to moderate the relationship between the PEOU and CI so as to find out the extent of the relationship. Based on the above issues, the below hypothesis is formulated:

H_6: *Computer self-efficacy moderates the influence of perceived ease of use on the continuance intention to use e-collection system in Nigerian federal hospitals.*

3.4 Conclusion

Based on the critical analysis in this chapter, it was found that PU and PEOU variables from TAM were found to be the most appropriate factors in predicting the CI of eCS use in Nigerian federal hospitals. In addition, three additional independent variables were integrated into the original TAM to serve as an extension to the model. This is done with a view to effectively predict and test the relationship between the influencing factors as well as the moderating effect of CSE on the continuance intention of employees to use eCS in Nigerian federal hospitals.

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Introduction

This chapter presents the methodology of the study. It highlights the steps in which the study was carried out. These steps are composed of the methods and techniques used in achieving the desired objectives. Specifically, this section explains the research design, population, sample size and the sampling technique employed in the study. It also describes the sources of data collection and the method of data analysis employed in the study.

4.2 Research Design

Research design is a structure or a work plan schedule that helps in providing a road map to achieve the desired objectives in a research study (Bhatti & Sundram, 2015). In other words, research design is a detailed layout of conducting an investigation that comprise of how variables are operationalized, how data is collected, what sort of instrument to use in collecting data and what kind of tool to employ for its analysis (Sekeran & Bougie, 2013). According to Zikmund, Babin, Carr and Griffin (2012), research design is categorized into three types: historical design, survey design and experimental design. They further explained that while the historical design uses secondary sources to explore information, survey and experimental designs use primary sources of data.

Therefore, this study employs survey design method and uses a questionnaire instrument as a primary source of data in gathering the required information with a

view to answer the research questions and achieve the desired objectives of the study. The research setting is a cross-sectional one as it involves the collection of data at once which is being used to answer the research questions in a given research (Bhatti & Sundram, 2015). The choice of cross-sectional is justified due to the nature and time constraint of the study so that time and cost could be saved (Sekeran & Bougie, 2013).

4.3 The Population of the Study

According to Creswell (2012), population is a group of people, events or things that share the same characteristics and other attributes which can be studied in a research. It also refers to a collection of animate or inanimate, events or things of interest on which a researcher wishes to study (Sekeran & Bougie, 2013). In this study, as the exact number of the population could not be determined, estimation was made based on the prior knowledge (through telephone conversation with the top three officials of some federal hospitals) on the average number of eCS users in each type of the hospital. Therefore, all things being equal, the population of this study is approximately 684 eCS users which was computed in Appendix C and summarized in Table 4.1. The unit of analysis for this study is individual because the target respondents are the individual employees working with the Nigerian federal hospitals that operates or use the system in the performance of their job tasks. Altogether, the total number of federal hospitals in Nigeria is 55 which are categorized into three different types (Appendix A). These are: Federal University Teaching Hospitals (FUTH), Federal Medical Centers (FMC) and Federal Specialist Hospitals (FSH).

Table 4.1
Population of the Study

Type of Hospital	No of Hospitals	eCS users per Hospital	Total No. of eCS users
Federal University Teaching Hospitals	21	17	357
Federal Medical Centers	21	10	210
Federal Specialist Hospitals	13	9	117
Total	**55**		**684**

Source: Generated by the Researcher, 2016.

4.4 Sample Size

Sample is a subset of the population that is studied to represent the whole on which conclusions could be drawn and generalized (Sekeran & Bougie, 2013). It has become necessary to use samples in a research study due to the infeasibility to collect data from each and every element of the population. Sekeran and Bougie, (2013) uphold that studies with samples tend to be more reliable and with less error in data collection. Some of the advantages of using sample include saving cost and time. In addition, the use of sample in survey study is useful because it helps to cover a wide range of population with small sample representation (Bhatti & Sundram, 2015).

In an effort to get an appropriate sample size for this study, Kriejcie and Morgan table (Appendix D) for determining sample size was used. As stated earlier, the population of this study is 684 eCS users and based on the Kriejcie and Morgan table, the approximate minimum sample size required for this study is 248. Nevertheless, the sample size for the study was increased to 354 samples to reduce sampling error and handle the unavoidable low response rate during data collection (Hair, Wolfinbarger, Money, Samouel, & Page, 2015). Moreover, Alrech and Settle (1995) stressed that results from higher sample size are more accurate than those with small sample size.

4.5 Sampling Technique

The study employed cluster sampling technique. This technique is mostly used when samples are widely dispersed across geographical areas. It is a process whereby the entire population is subdivided into separate geographical locations known as clusters from which random selection could be made (Sekeran & Bougie, 2013). According to Neuman and Robson (2008), cluster sampling technique is less expensive and suitable for a widely dispersed geographical setting. The Nigerian federal hospitals are widely spread across 36 states in the six geographical zones and the Federal Capital Territory (FCT) as shown in Figure 4.1.

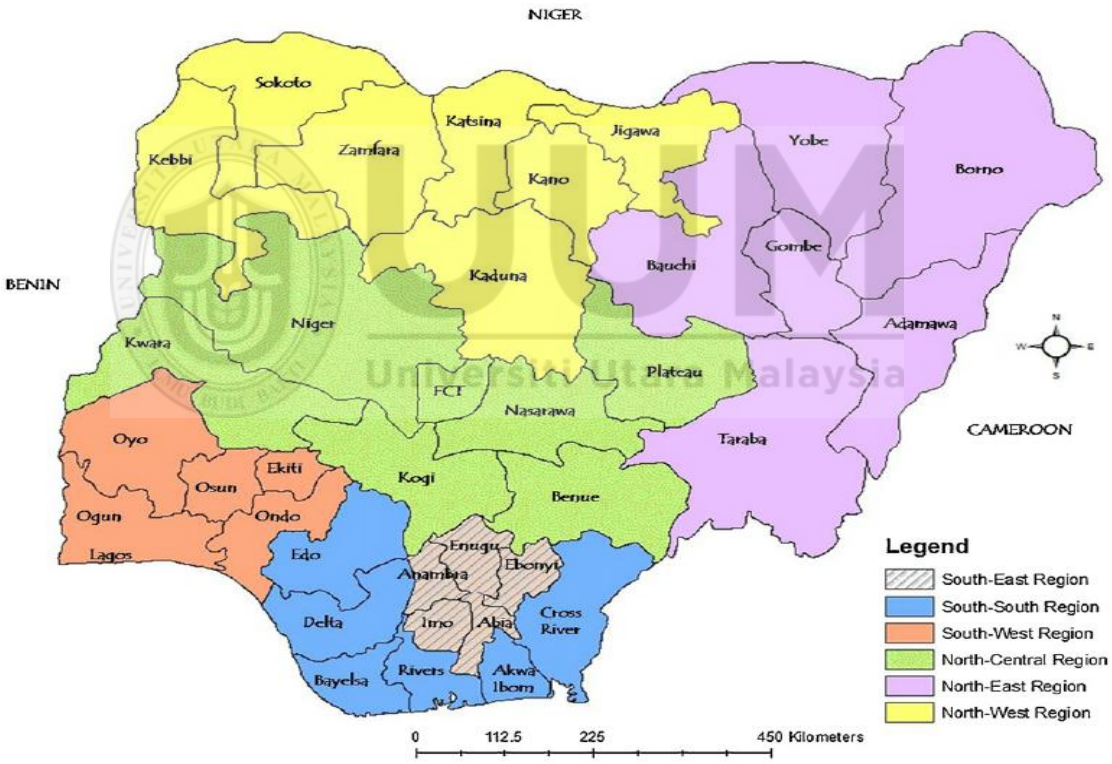


Figure 4.1
Map of Nigeria showing the 36 states and FCT - Abuja

Nigeria is a large country with an estimated population of 187 million people (United Nations, 2017) and a surface area of about 923,768 square kilometers (National Population Commission & ICF International, 2014). It is also worth to know that the

choice of this technique will not affect the generalizability of the findings because all the respondents have the same working guiding principles under the federal civil service rules and regulations. In other words, federal hospitals are wholly owned by the federal government, and the entire rules and regulations governing the staff (the respondents in this study) working conditions are the same.

Furthermore, for the purpose of the sampling, Nigeria is subdivided into six geopolitical zones namely: North East, North West, North Central, South East, South West, South-South and the FCT. To this effect, each geopolitical zone represents a cluster and out of the six geopolitical zones, three zones were selected and the FCT, making a total of four clusters. The reason for selecting three zones and the FCT is due to the dispersed locations of the federal hospitals across the country as earlier mentioned, coupled with the limited time limit for the data collection period. Therefore, only the hospitals that are located in the North East, North West, North Central and the FCT clusters were selected and the entire eCS users in these four clusters were used as the respondents accordingly. The map of Nigeria showing the six geopolitical zones and the FCT - Abuja is shown in Figure 4.2.

Figure 4.2
Map of Nigeria showing the 6 geopolitical zones and FCT - Abuja

Furthermore, as stated earlier, equal samples were drawn from each of the sampled hospitals based on the average number of eCS users in each category of hospital. Seventeen respondents were selected from each FUTH, 10 from FMC and 9 respondents from FSH as computed in Appendix C and summarized in Table 4.2.

Table 4.2
Sample of the Study

Geo-political Zone	**FUTH**	**FMC**	**FSH**	**TOTAL**
North-East	51	40	9	**100**
North-West	51	40	45	**136**
North-Central	34	40	-	**74**
FCT	34	10	-	**44**
Total	**170**	**130**	**54**	**354**

Source: Generated by the Researcher, 2016.

4.6 Operationalization of Variables

Operational definition is the way or specification in which a researcher wishes to define, measure and explain the variables in research, which is peculiar and distinct to his/her research work (Creswell, 2012). Operationalization is the best way to measure a variable and as such, this section defines and operationalizes all the variables that have been used in this study. Equally, all the adapted measurements were fully explained and discussed. Five-point Likert rating scale that ranges from strongly agree to strongly disagree represented from 5 to 1 respectively was used in measuring the extent of agreement of the respondents for all the items used in the study. The use of this scale is justified from it widely usage by previous related research works due its ease of understanding (Boone & Boone, 2012). Lastly, all items and the modified ones are presented on a table in Appendix E of this research work.

4.6.1 Continuance Intention

According to Davis et al. (1989), behavioral intention refers to the strength of an individual intention to perform a specific behavior. However, in the context of this study, behavioral intention is considered as the 'continuance intention' and has been operationalized as the extent of employees' intention to continue the use eCS in accomplishing their job tasks in Nigerian federal hospitals. This variable is adapted with some modifications from the work of Davis et al. (1989), which was also adapted by other studies (Luarn & Lin, 2005; Pai & Huang, 2011; Merchant et al., 2015). The original items and the modified ones are presented in Appendix E. The measurement is expressed on a 5 point rating scale, ranging from 5-strongly agree to 1- strongly disagree for the following items:

1. Even if eCS is not mandatory to use, I intend to continue to use it at all time in doing my job tasks
2. Even if eCS is not mandatory to use, I predict that I will continue to use the system at all time in my future job tasks
3. Even if eCS is not mandatory to use, I believe my interest in eCS use will continue to increase in the future
4. Even if eCS is not mandatory to use, I am willing to continue to use the system in performing my assigned duties
5. Even if eCS is not mandatory to use, I intend to continue to use it in executing my job tasks
6. Even if eCS is not mandatory to use I would like to use similar system to improve my job skills
7. I am glad to learn new techniques in my job using eCS.

4.6.2 Perceived Usefulness

In this study, PU is operationalized in this study as the degree to which an individual believes that using a specific system would enhance his or her job performance. This variable is adapted from the work of Davis (1989) which was later adopted and adapted by many researchers. The Cronbach alpha for this variable as reported by Davis (1989) was 0.98. Below are the items of measurements that are expressed on a 5 point rating scale, ranging from 5-strongly agree to 1- strongly disagree:

1. Using eCS enables me to carry out duties more quickly
2. Using eCS improves my performance on the job
3. Using eCS enhances my productivity
4. Using eCS system enhances my effectiveness in my daily work

5. Using eCS system makes it easier for me to carry out my job tasks
6. Overall, eCS system is useful in my job

4.6.3 Perceived Ease of Use

Perceived ease of use refers to the degree in which a person assumes that using a particular system will be free from effort. This variable is adapted from the work of Davis (1989). It was reported to have a cronbach alpha of 0.94. Awad and Ragowsky (2008), Srite and Karahanna (2006) and Malhotra and Galletta, (2005) were among the IS researchers that later adopted it. Equally, the measurement is expressed on a 5 point rating scale, ranging from 5-strongly agree to 1- strongly disagree for the following items:

1. Learning to operate eCS is easy for me.
2. I find it easy to manipulate eCS to do what I want.
3. In my interaction with eCS, I find it clear and understandable.
4. I find eCS flexible to use in performing my job tasks.
5. It is easy for me to become skillful at using eCS in my work.
6. I find eCS easy to use in the performance of my assigned duties.

4.6.4 Perceived Information Quality

Information quality is expressed in this study as the extent to which the financial information produced from the system is relevant and enhances operational efficiency that helps in effective decision making. This construct is adapted from the work of DeLone and McLean (2003) and Gable et al. (2008). The cronbach alpha reported by Gable et al. (2008) was 0.75. The measurements are expressed on a 5 point rating scale, ranging from 5-strongly agree to 1- strongly disagree for the following items:

1. Information from the eCS is always available when needed
2. Information provided by eCS seems to be exactly as needed
3. Information from the eCS is readily usable
4. Information provided by eCS is accurate
5. Information from eCS is always timely
6. Information provided from eCS is relevant to my work
7. Information provided by eCS meets the needs of my job tasks
8. Information provided by eCS is readable and understandable
9. Information from eCS is always up-to-date
10. Information from eCS appears to be concise and clear

4.6.5 Perceived Enjoyment

In this study, PE refers to the extent to which the use of a system is pleasant and enjoyable. This variable is adapted with some modifications from the work of Igbaria et al. (1995) and Khedhaouria and Beldi (2004) with a cronbach alpha of 0.86 and 0.815 respectively. The measurement is expressed on a 5 point rating scale, ranging from 5-strongly agree to 1- strongly disagree for the following items:

1. It is fun working with eCS system
2. I find it pleasant when working with eCS
3. It is pleasurable working with eCS
4. I feel excited when working with eCS
5. It is enjoyable working with eCS
6. I feel delighted when working with eCS
7. It is playful working with eCS

4.6.6 Computer Self-Efficacy

Computer self-efficacy in this research is explained as the individual capability or ability to use computer in the performance of job tasks. This construct has been used by many researchers in past studies. For the purpose of this research work, CSE variable is adapted with some modifications from the work of Cassidy and Eachus (2002), Wangpipatwong et al. (2008) and Ratten (2013). The internal consistency of the construct as reported by Cassidy and Eachus was 0.97. The measurement of this construct is expressed on a 5 point rating scale, ranging from 5-strongly agree to 1-strongly disagree for the following items:

1. I found working with computer systems very easy
2. I have no difficulties in using computer software applications
3. I can learn computer software applications using built-in help facility on the system
4. I am confident in troubleshooting computer problems
5. I am very sure of my ability to use e-collection systems on computers
6. I am confident in my ability to make use of eCS with computers
7. I find it easy with computers on learning how to use eCS
8. I can work with eCS on computers, even if no one shows me how to do it
9. I consider myself to be a skilled eCS user with computers
10. I can handle computers better than most people do.

4.7 Instrumentation (Questionnaire Design)

A questionnaire is a written set of questions usually designed by researchers to seek opinion of respondents. It is the best instrument for collecting data from respondents in survey research, especially when a study is explanatory or descriptive in nature (Sekeran & Bougie, 2013). It is seen as the best method because it is less time consuming and less expensive compared to other methods of data collection. The questionnaire of this study is designed with five point Likert scale to enable the researcher understand the extent of agreement or disagreement of the respondents on the issues under study. Questionnaires with Likert scale are universal in usage and understandable by most respondents without much difficulty (Sekaran & Bougie, 2013). Krosnick and Fabrigar (1997) argued that the use of midpoints scales in research always provides better and accurate results. Furthermore, Neuman and Robson (2008) opined that the most appropriate scale that provides good result is the five point scale. In view of these advantages, five-point scale was used for all the items on the questionnaire. The sample of the questionnaire of this study is on Appendix F.

4.8 Pre-Test and Pilot Test

The study found it necessary to pre-test the questionnaire with a view to ensuring that the wordings is clearly understood by the respondents so that they can answer the questions without much difficulty (Sekaran & Bougie, 2013). Firstly, the questionnaire was presented to two lecturers in Bauchi State University Gadau and Abubakar Tafawa Balewa University Bauchi that specializes in e-payment system and technology management respectively. Equally, the questionnaire was presented to an experienced senior staff from human resource department of Federal University

Teaching Hospital Gombe, to peruse and advice accordingly. They were asked to examine the content in terms of measurement, wordings and its simplicity (Yaghmale, 2009). The wordings of some items were rephrased to make it clearer and understandable. After that, the pre-test was carried out with 10 eCS users in Abubakar Tafawa Balewa University Teaching Hospital in Bauchi town. It took the researcher a period of five days (4^{th} to 8^{th} April 2016) to complete. During the pre-test, some of the respondents raise valuable observations relating to respondents' background information. All the observations from experts in the field and the pre-test respondents' observations were also taken into consideration in drafting the final draft of the questionnaire.

A pilot study is a process whereby considerate numbers of respondents are used to test a research instrument before the actual full scale test (Gay, Mills, & Airasian, 2011). One of its advantages is identifying the shortcomings of the research instrument prior to the conduct of full scale test and to ascertain the reliability in term of internal consistency of the items on the questionnaire. The number of respondents in pilot study is relatively small, depending on the nature of the actual sample size (Hertzog, 2008). Hill (1998) opined that the number of samples for pilot study should be within ranges from 10 to 30 respondents. In this study, 30 eCS users from Abubakar Tafawa Balewa University Teaching Hospital Bauchi were used for pilot test. After the pilot test, reliability test was tested to measure the internal consistency of the research instrument. Table 4.3 presents the result of the reliability test after the pilot test and shows a very good assumption on the reliability of the instrument.

Table 4.3
Reliability Analysis for Pilot Test

Variable	No of Items	Cronbach's Alpha
Perceived Usefulness	6	.816
Perceived Ease of Use	6	.896
Perceived Information Quality	10	.801
Perceived Enjoyment	7	.926
Computer Self-efficacy	10	.928
Continuance Use Intention	7	.910

Source: Generated by the Researcher

4.10 Data Collection Procedures

Data collection is the process of gathering data on a phenomenon with a view to extract meaningful information therefrom. In view of this, personal administration of the questionnaires was employed. This method is adequate and more feasible in the Nigerian environment. In the first place, it enables the researcher to collect all the completed questionnaires within a short period of time and secondly, it provides the avenue for the researcher to personally get in contact with the respondents to enhance timely and quality response. It also helps to some extent, in overcoming any unclear question on the instrument since the researcher is available to render any explanation needed by the respondents. The method also enhances the actualization of high response rate among others. The distribution of the questionnaire and retrieval took the researcher about 3 months (April to July 2016).

4.11 Techniques for Data Analysis

Data analysis is the most interesting part in conducting a research. It is a transformation of raw data into a meaningful form that will make it easy to understand and interpret (Yaacob, 2013). In view of this, the choice for statistical tool and standard method for data analysis is of paramount importance. Therefore, in the quest

to get meaningful information from the data collected, Statistical Package for Social Science (SPSS) version 23 was used in this study. Thus, the following methods of data analysis were employed: descriptive statistics, factor analysis and multiple regression analysis.

4.11.1 Descriptive Statistics

Descriptive statistics are useful in describing the characteristics of the data being worked on. In this study, descriptive statistics were used to permit a good understanding of the data which is useful in answering the research questions of the study. Descriptive statistics such as mean, standard deviation, variance and frequency table were computed and reported.

4.11.2 Content Validity

Validity of measuring instrument can be defined as the degree to which an instrument measures what is expected to measure. The content validity of an instrument is ensuring that all items on the instrument adequately represent the concept of what is supposed to measure. It is also a process of seeking professional advice from expert in a given research field on the suitability and correctness of all the listed items chosen to measure a particular construct on an instrument (Hair et al., 2015; Sekaran & Bougie, 2013). As such, the content validity of the study instrument was reviewed and assessed by seasoned experts comprising of both academicians and practicing professionals in public sector hospitals.

4.11.3 Factor Analysis

Factor analysis is a reduction tool or mechanism that is used in condensing the variable structure in a given set of data to a more manageable form with the aim of identifying a small number of factors that explain most of the variance observed (Pallant, 2013; Yacoob, 2013). According to Hair et al. (2015) and Coakes and Ong (2011), the required sample size to perform factor analysis is 100 and above. In this study, Kaiser-Meyer-Olkin (KMO) and Bartlett's test of Sphericity are the statistical measures that were used to study and assess the factorability of the data.

4.11.4 Reliability Analysis

Reliability is a measure of internal consistency of a set of scale items. It also refers to the extent to which a scale produces consistent results over time (Bhatti & Sundram, 2015). In other words, it is the extent to which a measuring instrument is consistent, error-free, and stable across items and across time in a scale (Sekeran & Bougie, 2013). The common reliability test of inter-item consistency is the Cronbach's alpha coefficient and it is the one that has been used in this study to measure the internal consistency of all the items on the questionnaire.

4.11.5 Correlation Analysis

This is a statistical technique that explains the level of association between two variables). In other words, correlation is being used to explain both the strength (high or low) and direction (positive or negative) of a linear relationship between two variables. Therefore, correlation analysis was carried out in this study using Person Correlation Method in assessing the strength and direction of the interrelationships among the research variables. Pallant (2013) stated that a correlation of 0 indicates the

non-existence of a relationship in totality. On the other hand, a correlation of 1 indicates a perfect and a positive association, while a correlation of -1 designates a perfect negative relationship. In addition, Cohen (1998) provides a working guideline for interpreting the computed correlation values that are halfway between 0 and 1. He suggested that r=0.10 to 0.29 as small; r=0.30 to 0.49 as medium; r=0.50 to 1 as large. It is worthy to note that, for the purpose of interpretation, the range of values stated above entails for both the positive and negative numbers.

4.11.6 Regression Analysis

Multiple regression analysis is a statistical technique used in examining the close relationship between a dependent variable and two or more independent variables (Bahtti & Sundram, 2015; Field, 2013). In other words, it can be seen as a situation whereby multiple independent variables are hypothesized to affect the dependent variable. In the same vain, multiple regression analysis was employed in this study to investigate the influence of the independent variables on the dependent variable and the moderating effect of CSE on the relationship between PU and PEOU on the dependent variable.

4.12 Summary

In a nutshell, survey was explained as the method used to conduct the research with the aid of cluster sampling technique. Also, all the study variables were fully operationalized with their measurements accordingly. Moreover, the instrument used, the procedures followed in the data collection and the statistical techniques applied for the analysis.

CHAPTER FIVE

DATA ANALYSIS AND RESULTS

5.1 Introduction

In Chapter Four, the research framework of this study was conceptualized to examine the relationship between the influencing factors on the use of technology and the continuance use intention of eCS in Nigerian federal hospitals. Accordingly, hypotheses were formulated to test the extent of the relationship that exists between the study variables. In essence, the central focus of the present chapter is to present the analysis and results from the data collected. In particular, data screening, non-response bias, descriptive statistics, reliability test, factor analysis, correlation analysis and multiple regression analysis are reported accordingly.

5.2 Data Collection Procedure and Response Rate

As earlier explained in chapter four, the population of the study is 684 and the minimum required number of sample size as indicated on Kriejcie and Morgan table is 248 (Appendix D). Nevertheless, the researcher has increased the number to 354 to cover up non-response and sampling error issues as suggested by Hair et al. (2010). It is on this ground that a total number of 354 questionnaires were distributed to each eCS user in all the federal hospitals located in the three geopolitical zones in the northern part of Nigeria. Also, in order to get useful response, the researcher engaged in distributing the questionnaires to employees that operate or supervise the system only. These include employees from accounts and finance department, audit section and IT department. Some of the respondents filled and returned the questionnaires

instantly, while others took them days and weeks to respond. Additionally, in order to achieve a high response rate, the researcher has engaged into a face-to-face contact with the heads (in charge) of the concerned units and departments in order to explain the purpose of the study and solicit for their cooperation and assistance to ensure the full participation of their subordinates is achieved in the survey. After the distribution of the questionnaires, the researcher made frequent follow-up via telephone calls and text messages in ensuring that the questionnaires were filled and returned. Interestingly, this strategy had yielded positive result in achieving 77% response rate and the data collection period of the survey took about 3 months starting from April 2016 and ends in July 2016.

In distributing the questionnaires to the surveyed hospital, an introductory letter from Othman Yeop Graduate School Management, Universiti Utara Malaysia and a cover letter addressed to respondents through their respective head of departments were accompanied alongside with the questionnaires (Appendix F). The purpose of this covering letter was to seek their permission to allow their subordinates to participate as respondents in the study. Fascinatingly, the high response rate stated above was achieved through the cooperation of these head of the departments within the hospitals. Out of the 354 questionnaires distributed, 274 were duly completed and returned. However, 11 questionnaires were either half-way completed or less than halfway completed, and thus excluded from the analysis as recommended by Hair et al. (2010). Furthermore, 32 responses were excluded from analysis due to outlier issues. Consequently, the usable questionnaires were reduced to 231 which in turn decreased the response rate to 65%. Nevertheless, Sekaran (2003) is of the view that 30% response rate is adequate for a survey and therefore, 65% response rate is

adequate and sufficient to validate the survey. Equally, in running regression analysis, the response rate is considered satisfactory when the sample size has reached between 5 to 10 times the numbers of the variables of the study (Hair et al., 2010; Sekaran & Bougie, 2013). In any way, the usable responses have met the requirement for further statistical analysis. The analysis of the distributed questionnaires and response rates is shown in Table 5.1.

Table 5.1
Analysis of Distributed Questionnaire and Response Rate

Item	Frequency	Percentage (%)
Distributed questionnaires	354	100
Returned questionnaires	274	77
Rejected questionnaires	11	3
Excluded questionnaires (outliers)	32	9
Total number of usable questionnaires	231	75
Response Rate		**77**
Valid Response Rate		**65**

5.3 Data Inspection and Screening

Data inspection and screening is an important aspect to consider when conducting multivariate analysis. It is argued that the quality of any research outcome is basically dependent on its initial data quality (Pallant, 2013). For this reason, the data for this study were appropriately inspected and screened in accordance with the procedures set out by Coakes and Ong (2011), Hair et al. (2010) and Pallant (2013). These procedures include: unengaged responses, treatment of missing values, detection of and deleting of sensitive outliers and normality test to mention among others.

5.3.1 Unengaged Responses (Monotone)

Unengaged or monotone responses are answers that have no variance or in simple term, when the variance of a case is equal to zero. In other words, unengaged response

is a situation where the respondent fills out the questionnaire with same response all through and by implication; the respondent was not really engaged at the time of answering the questionnaire. In this regard, such kind of response has no value to the analysis and therefore need to be removed from the data set (Roni, 2014; Yeh, 2009). Interestingly, there was no single case of unengaged response in this study as the variances computed for each respondent is greater than zero.

5.3.2 Analysis of Missing Data

Missing data refers to unattainability of some values of items on one or more variables in survey responses (Hair et al., 2010). The negative effect of missing data on quantitative study can lead to enlarged standard errors, biased estimates of parameters as well as weakening the generalizability of research findings (Dong & Peng, 2013). Therefore, in an effort to minimize missing values, the researcher requested the assistance of some volunteer staff within the respondents (in each hospital) in retrieving the questionnaires. The researcher requested from them that on receipt of any questionnaire, a proper check should be carried out to ensure that respondents have not left any question unanswered.

Interestingly, this precaution has yielded good results to the extent that there was no missing value recorded in the demographic data of the respondents. However, some few missing values were observed during data entry in some of the core questions. Introductory descriptive analysis of missing data shows that, out of the 12,089 data points, 32 cases representing about 0.22% were randomly missed. Specifically, PU and CSE had 6 missing values each and PEOU was recorded with 7 missing values.

Also, while PIQ is spotted with the highest missed items, PE and CI were found with the lowest missing values of three and one respectively.

Although there is no standard cutoff figure from the literature on an agreed percentage of missing data, but Schafer and Olsen (1998) are of opinion that missing value of less than or equal to 5% in a data set is not significant and therefore need not be considered. However, other researchers have recommended that mean substitution should be applied to replace missing values (Tabachnick & Fidell, 2007). Going with the latter recommendation, all randomly missed values in this study were replaced by mean substitution method. The detailed analysis and summary of the missing values are presented in Appendix G and Table 5.2 respectively.

Table 5.2
Summary of Missing Data

Variable	Number of Missing Items
Perceived Usefulness	6
Perceived Ease of Use	7
Perceived Information Quality	9
Perceived Enjoyment	3
Computer Self-efficacy	6
Continuance Intention	1
Total	**32**

5.3.3 Treatment of Outliers

In conducting surveys, it is always existent to observe some few cases that differ significantly from others in a given set of data. These cases are called outliers in statistical analysis (Hair et al., 2010; Byrne, 2010). In a regression-based analysis, these outliers can cause serious distortion of estimates in regression coefficient, which may in turn, weaken the reliability of research findings (Pallant, 2013; Tabachnick & Fidell, 2007). Thus, to attain reliable and valid results, these outliers must be identified and erased from the data set (Hair et al., 2010). In dealing with outliers,

there are different methods of detection, and these include, among others: normal probability plot (for spotting out of range outliers), z-score (for detecting univariate outliers) and *Mahalonobis* method (for identifying multivariate outliers). Univariate outliers are responses with extreme values on a single variable and multivariate outliers represent those extreme cases on a combination of variables. In respect to this, Hair et al. (2010) recommends that both univariate and multivariate outliers should be identified and erased from the data.

Firstly, in this study, data for all items on the questionnaire were screened with frequency analysis to check for the extreme minimum and maximum values in order to detect 'out of range values'. Based on the result, none of the values have surpassed the range (1-5) and this implies that there is no coding error. Secondly, univariate outliers were examined for detection and subsequent deletion. According to Tabachnick and Fidell (2007) univariate outliers could be observed through z score values and it is required that all observations should fall within the range of ±3.29 (0.001 sig. level). In this study, a total of 32 univariate outliers are greater than +3.29 and thus, deleted accordingly.

A further check using *Mahalonobis* distance was also carried out with a view to detecting multivariate outliers. Also, Tabachnick and Fidell (2007) recommend that the degree of freedom is equal to the number of its independent variables utilized in that particular study. In view of this, given the number of independent variables in this study, the degree of freedom is five and equally, the degree of freedom at P>0.001 on the chi-square table is 15.09. Therefore, any observation with *Mahalonobis* distance exceeding this value is an outlier. After a thorough check, five cases: 114, 137, 188,

210 and 221 with corresponding values of 15.31, 16.01, 15.37, 17.43 and 16.77 were detected as outliers. However, before such observations are set for deletion, Hair et al. (2010) recommends that further investigation using Cook's distance should be carried out to ascertain the extent of possible effects such outliers on further multivariate analysis. In this aspect, Cook and Weisberg (1982) are on the view that any case with a cook's distance value of less than 1.0 should not be considered as an influential outlier and therefore it could be retained for further analysis. A cook's distance test was conducted and the results in Table 5.3 ratify that all the detected outliers are not influential.

Table 5.3
Multivariate Outliers

S/N	Case number	Mahalanobis Distance	Cook's Distance
1	114	15.31	0.67
2	137	16.01	0.00
3	188	15.37	0.11
4	210	17.43	0.14
5	221	16.77	0.14

Additionally, it is argued that when the number of outliers in a study is less than 2% of the total observations (231 in this study) it is strongly recommended that such outliers should be retained. Therefore, since only five multivariate outliers were detected with no extreme values, all the cases are suitable for retention (Cohen, Cohen, West, & Aiken, 2003). Consequently, 231 cases remained eligible for further multivariate analysis.

5.4 Non-Response Bias

Non-response bias is the obvious error which a researcher forestalls to commit in estimating the characteristics of the sample under study. In other words, it is the

difference of response that occurs between respondents and non-respondents in the survey. It is argued in the literature that the likelihood of non-response bias in a survey is not determined by the response rate and thus, there is no minimum or maximum rate to which bias is to be estimated (Rindfuss, Choe, Tsuya, Bumpass, & Tamaki 2015). As a result, Pearl and Fairley (1985) viewed that non-response bias exists in every kind of survey regardless of the non-response rate. This validates the need for this study to carry out non-response bias test with a view to investigate the disparity that might occur in responses among the respondents on the research variables. To estimate the non-response bias in this study, independent samples t-test was conducted to compare the two categories of respondents and to identify any possible differences that occur between them (Armstrong & Overton, 1977). For this purpose, the respondents were divided into two parts based on the timing of their response. Those that responded early (within a week) are categorized as early respondents and those that answer late (after one week) are regarded as late respondents. In essence, the responses of those that responded after one week were presumed to represent the non-respondent samples.

Table 5.4
T-test Comparison between Early and Late Respondents

Variable	Group	N	Mean	Std. Deviation	F	Sig.
PU	Early respondents	139	4.4243	.40022	2.700	0.102
	Late Respondents	92	4.3358	.47198		
PEOU	Early respondents	139	4.1359	.54369	2.403	0.122
	Late Respondents	92	4.0419	.65029		
PIQ	Early respondents	139	4.1424	.44881	0.618	0.433
	Late Respondents	92	4.0531	.42032		
PE	Early respondents	139	3.8814	.60104	3.629	0.058
	Late Respondents	92	3.8026	.72039		
CSE	Early respondents	139	3.8533	.63262	0.451	0.502
	Late Respondents	92	3.8174	.68062		
CI	Early respondents	139	4.2425	.49207	1.973	0.161
	Late Respondents	92	4.2764	.40284		

A look at the results in Table 5.4 reveals that the mean and the standard deviation for both groups are significantly not different with each other. In other words, the mean and standard deviation between the early and late respondents are close to each other and hence, it was concluded that the statistical difference between the two groups is insignificant and could not have any effect on the generalization of the results. Additionally, the Levene's Test for Equality of Variance between the early responses and late responses also confirms the non-significance difference between the two groups. Evidently, Table 5.4 shows that the values for all the research variables were greater than 0.05. Based on this, the assumption of equal variance between early responses and late responses in this study was not violated.

5.5 Demographic Features of the Respondents

Table 5.5 presents the statistics of the demographic characteristics of the respondents that participated in this survey. Starting with the hospital type, in aggregate, the respondents from FMC out-numbered those from FUTH and FSH. This is because, the total number FMC located around the three geopolitical zones far outweighs other categories of hospitals. A look at Table 5.5 reveals that FMCs carries 39%, FUTH takes 38% and FSH has the lowest respondents with only 23% of the total respondents.

Next is the analysis of system users' departments. Electronic collection system is an integrated system that is being used by different departments within the hospitals. Thus, Table 5.5 reveals that the majority of eCS users are staff from Accounts and Finance department with almost 70% of the total respondents, followed by audit

section with 19% and the least is IT department having only about 11% of the total respondents.

Looking at the respondents' gender, Table 5.5 further reveals that almost 75% of the total respondents are male, while the remaining 25% of the respondents are female. This has clearly revealed the dominance of male personnel staff in Nigerian federal hospital's workforce. By looking at the age bracket of the respondents, employees that are between 18-25 years takes around 20%, while those between 26-35 years have the highest number of respondents of 82 participants. Also, the analysis discloses that respondents that are within the ages of 36-45 represent almost 26% of the total respondents. Lastly, older employees that are more than 45 years take 20% of the total respondents.

Regarding the educational qualifications of the respondents, Table 5.5 clearly shows that almost 26% and 39% of the respondents are secondary school and Diploma certificate holders respectively. Also, it displays that respondents with Bachelor degrees makes 26% of the entire sample and those with postgraduate qualifications represent only 9.5%. Mostly, respondents with secondary and diploma certificates operate the system and the latter two categories supervise and/or oversee the operating staff.

Furthermore, Table 5.5 further reveals that majority of the respondents are proficient in basic computer operations. This category of eCS users shows a record of 76% of the total respondents. The next is the category of users that have software skills recording about 19% of the total respondents. However, the analysis reveals that only

few of the users (mostly from IT department) are experts in computer hardware skills and networking skills with only 1% and 4% of the total respondents respectively.

In terms of current system usage experience, those with 1-2 years dominated the survey with almost 46%. In aggregate, the analysis indicates that almost 77% of the respondents have not more than 3 years usage experience of the current system. Nevertheless, one to two years of experience is enough for the eCS users to express their opinion on the system. Finally, answers from the respondents reveal the lack of previous system experience that is similar to eCS. Therefore, it is evident from Table 5.5 that 77% of the respondents lack previous experience in the use of computer application software or a system that is similar or has the same characteristics with eCS. In consequence, this is a signpost showing that most of the respondents are beginners with regards to IS use.

Table 5.5
Analysis of Demographic Information of the Respondents

Demographic Features	**Categories**	**Frequency**	**%**
Type of Hospital	Federal University Teaching Hospital	87	37.7
	Federal Medical Centre	91	39.4
	Federal Specialist Hospital	53	22.9
	Total	**231**	**100.0**
Department/Section	Finance and Accounts	162	70.1
	Audit	44	19.0
	IT	25	10.9
	Total	**231**	**100.0**
Gender	Male	173	74.9
	Female	58	25.1
	Total	**231**	**100**
Age	18-25 years	45	19.5
	26-35 years	82	35.5
	36-45 years	59	25.5
	Above 45 years	45	19.5
	Total	**231**	**100**
Education	Secondary School Certificate	59	25.5
	Diploma/NCE/Grade II	90	39.0
	Bachelor Degree/HND	60	26.0

Table 5.5 (Continued)

	Postgraduate	22	9.5
	Total	**231**	**100**
Computer Skills	Computer operations	175	75.8
	Software Skills	43	18.6
	Hardware Skills	3	1.3
	Networking Skills	10	4.3
	Total	**231**	**100**
Current Experience	Less than a year	37	16.0
	1-2 years	105	45.5
	2-3 years	36	15.6
	More than 3 years	53	22.9
	Total	**231**	**100**
Previous Experience	Yes	53	22.9
	No	178	77.1
	Total	**231**	**100**

5.6 Descriptive Statistics of the Study Variables

Descriptive statistics is a statistical technique that permits the understanding and interpretation of the study sample. It is used for summaries and describes the data collected from observations. According to Pallant (2013), descriptive statistics is being used in research to characterize the features of the study sample and check for any violation of statistical assumptions among the research variables. Thus, the use of descriptive statistics is of paramount importance which cannot be undermined in this study.

The most commonly used measures in statistics that describes data are mean and standard deviation. The mean is the average value of the data collected through dividing all the elements by the total number of observations and it is expected that the mean value of the study variables should be equal to the mean or close to it (Sekaran & Bougie, 2013). However, in real life situations there is always a deviation from the mean among the observed values. The square root of this variance is known

as the standard deviation and this is a measure of dispersion that offers an index or guide for variability in a data set (Bhatti & Sundram, 2015). In this study, mean and standard deviation are used to describe the phenomena under study.

Additionally, mean and standard deviation are always used to describe the characteristics of studies that employ both ratio and interval scales. In this study, interval scale using five point Likert scale was employed. Furthermore, the suggestion made by Muhammad, Maheran, Jantan, and Taib (2010) on interpretation of mean score was also endorsed. They recommended that mean values of less than 2.33 are low, scores between 2.33 to 3.67 are regarded as moderate and values over and above 3.67 are considered to be high. Therefore, in summary, Table 5.6 has shown the summary of the descriptive statistics for both the dependent and the independent variables. Looking closely at this table, it could be deduced that PU has the highest mean score of 4.39, while CSE has been identified with the least mean score of 3.84. Nonetheless, the entire variables are regarded as good because all of them are within the range of high scores.

Table 5.6
Mean and Standard Deviation of the Study Variables

Code	Variable	Number of Items	Mean	Std. Deviation
PU	Perceived Usefulness	6	4.389	.431
PEOU	Perceived Ease of Use	6	4.099	.589
PIQ	Perceived Information Quality	10	4.107	.439
PE	Perceived Enjoyment	7	3.850	.651
CSE	Computer Self-Efficacy	10	3.839	.651
CI	Continuance Intention	7	4.256	.458

5.6.1 Continuance Intention

The descriptive statistics of CI for staff using eCS in Nigerian federal hospitals are presented in Table 5.7. As indicated on the table, there are seven items that describe

the CI of individual staff towards eCS. The item with the highest mean score (M=4.44, SD=0.59) is CI7, while CI2 is item the lowest but a good mean score of (M=4.11, SD=0.68). In this regard, almost all the items have high values which signify that the respondents had high CI to use the system.

Table 5.7
Descriptive Statistics for Continuance Intention

Code	Item	Mean	Std. Deviation
CI1	Continuance intention to use at all time	4.14	0.69
CI2	Continuance prediction to use in the future	4.11	0.68
CI3	Continuance interest to use in the future	4.29	0.73
CI4	Willingness to continue its use at all time	4.24	0.69
CI5	Continuance usage intention in job tasks	4.24	0.69
CI6	Continuance usage to improves job skills	4.33	0.62
CI7	Willingness to learn new skills with the system	4.44	0.57

5.6.2 Perceived Usefulness

The descriptive statistics that relate to the PU of the system are shown in Table 5.8. The result discloses that the mean and scores of respondents' perception of the system usefulness in their job task ranges from the highest (M=4.47, SD=0.53) to the lowest (M=4.32, SD=0.722) for PU1 and PU3 respectively. Interestingly, all the items have records of high mean values which indicate that the respondents' perception on the usefulness of the system in their work is very high. Specifically, PU1 (it makes work to be executed more quickly) tends to characterize that the main usefulness among the respondents is the system's ability to process transactions and execute job tasks more quickly.

Table 5.8
Descriptive Statistics for Perceived Usefulness

Code	Item	Mean	Std. Deviation
PU1	It makes work more quickly	4.47	0.53
PU2	It improves performance on the job	4.37	0.63
PU3	It enhances productivity of work	4.32	0.72
PU4	It enhances effectiveness in the job	4.35	0.67
PU5	It makes work easier	4.41	0.61
PU6	It is useful	4.42	0.58

5.6.3 Perceived Ease of Use

The respondents' views on the PEOU) were expressed through items PEOU1-PEOU6 in Table 5.9 and the mean score values of all the items are high, except for PEOU2 that has the lowest mean score (M=3.70, SD=1.13). Despite that PEOU2 is the lowest, the value is still moderate enough to explain the respondents' perception on the easiness they find to manipulate the system to produce the required output. Based on the table, item PEOU3 has the highest mean score value of 4.26 with an associated standard deviation of 0.63. Thus, PEOU variable is strongly characterized by PEOU3 as the ability of the respondents to easily understand the system.

Table 5.9
Descriptive Statistics for Perceived Ease of Use

Code	Item	Mean	Std. Deviation
PEOU1	Easy to operate	4.24	0.76
PEOU2	Easy to manipulate	3.70	1.13
PEOU3	Easy to understand	4.26	0.63
PEOU4	Flexible to use	4.04	0.96
PEOU5	Easy to be skillful	4.13	0.83
PEOU6	Easy to use	4.21	0.71

5.6.4 Perceived Information Quality

The descriptive statistics of PIQ are presented in Table 5.10 and the results indicate that PIQ4 has the highest mean score (M=4.38, SD=0.61) and this implies that accurate information that is being produced by eCS is the central feature perceived by the respondents that motivates them to use. Inversely, even though PIQ2 has a

moderate in term of mean value, but in this regard, respondents are of the view that, sometimes information produced by the system is not exactly as needed. By implication, there should be a constant system appraisal so as to improve and meet up with user requirements and system satisfaction.

Table 5.10
Descriptive Statistics for Perceived Information Quality

Code	Item	Mean	Std. Deviation
PIQ1	Availability of Information	4.00	.96
PIQ2	Information is exactly as needed	3.86	.92
PIQ3	Information is readily usable	4.31	.47
PIQ4	Accurate information	4.38	.61
PIQ5	Timely information	4.19	.74
PIQ6	Relevant information	4.15	.71
PIQ7	Meets the needs	3.93	.96
PIQ8	Readable and understandable	4.21	.91
PIQ9	Current and up-to-date for	4.05	.82
PIQ10	Concise and clear	3.98	.98

5.6.5 Perceived Enjoyment

The views of the respondents with regards to PE were represented in seven items as indicated in Table 5.11. The outcome of the descriptive statistics shows that PE4 has the highest mean values of 4.10 with a corresponding standard deviation of 0.73 which clearly implies that users are excited when using the system. On the hand, the least item with an average of 3.20 is PE7 and such least value indicates a low perception of the respondents that pertains to the playfulness enjoyed from using the system in executing their job tasks.

Table 5.11
Descriptive Statistics for Perceived Enjoyment

Code	Item	Mean	Std. Deviation
PE1	It is fun	3.77	.95
PE2	It is pleasant	4.01	.74
PE3	It is pleasurable	4.01	.67
PE4	It is exciting	4.10	.73
PE5	It is enjoyable	4.04	.82
PE6	It is delightful	3.83	.93
PE7	It is playful	3.20	1.19

5.6.6 Computer Self-efficacy

The mean and standard deviation on Table 5.12 shows that 10 items were used to describe the level of CSE of the respondents. According to the table, the result of the statistics shows that all the items were recorded with high mean scores and CSE5 scores the highest mean of 4.15. This clearly indicates that the respondents' ability to operate eCS on computers is the main characteristic that represents CSE among its users in Nigerian federal hospitals.

Table 5.12
Descriptive Statistics for Computer Self-efficacy

Code	Item	Mean	Std. Deviation
CSE1	Easiness of using computer systems	4.13	0.98
CSE2	No difficulties in software use	3.82	0.99
CSE3	Capable to learn software quickly	3.90	1.00
CSE4	Capable to troubleshoot problems	3.49	1.03
CSE5	Capable to use the system on computers	4.15	0.71
CSE6	Confident to use system on computers	4.12	0.74
CSE7	Easy to learn e-collection on computer	4.08	0.73
CSE8	Ability to learn the system without help	3.41	1.10
CSE9	Skilled system user with computer	3.77	0.97
CSE10	Capable to handle computers better than others	3.51	1.16

5.7 Factor Analysis

Factor analysis is a data reduction method used in statistics to reduce large number of variables to a smaller set of underlying factors before engaging them for further multivariate analysis (Coakes & Ong, 2011; Pallant, 2013). The purpose of conducting factor analysis is to ascertain construct validity among the study variables and to ensure that construct dimensions are effectively formed (Williams, Brown & Onsman, 2012). For this reason, factor analysis based on Principal Component (PC) with varimax rotation was carried out in this study to ascertain the discriminant validity among the variables. However, before the conduct of factor analysis certain conditions are assumed to be met. The first condition pertains to the sample size, and on this point, Coakes and Ong (2011) and Hair et al. (2010) suggested that a minimum of five respondents for each variable in a study is required for factor analysis. The number of variable used in this study is six and the total number of usable respondents is 231. Going with this, therefore, the study has fulfilled the sample size requirement. Comrey and Lee (2013) categorized sample size for the purpose of factor analysis into four explaining that a sample size of 1000 is considered as excellent, 500 as very good, 300 as good, 200 as fair, 100 as poor and 50 as very poor. However, Coakes and Ong (2011) suggest that a minimum sample of 100 responses is acceptable for factor analysis, but 200 and above is preferable. Therefore, with a sample size of 231 and six variables in this study, the requirement has been met for conducting factor analysis.

Secondly, according to Pallant (2013) factor analysis is considered more appropriate when Kaiser-Meyer-Olkin (KMO) is 0.6 or above and Bartlett's Test of Sphericity value is significant at ($p<0.05$). Additionally, factorability is better assumed when the

majority of the coefficients of the correlation matrix are in excess of 0.3 (Tabachnick & Fidell, 2007). In view of this, the study used all the above-mentioned criteria. Additionally, the extracted factors were built on eigenvalue equals to or greater than one. Furthermore, any communality of lower than 0.5 should be removed so that the overall variance explained will increase. Similarly, factor loadings of less than 0.5 should be deleted. Lastly, naming of factor is based on the one that has a higher loading (Hair et al., 2010). In a nutshell, the above stated rules were used for the conduct of PC analysis in this study and the discussion of the analyses for the dependent, independent, and moderating variables are presented below:

5.7.1 Dependent Variable

A principal component analysis (PCA) was conducted on the seven items for the dependent variable (CI) using varimax rotation. At the initial stage, an inspection of the correlation matrix was carried out and it was observed that considerable numbers of the coefficients are within the range of 0.3 and above. Therefore, the matrix is suitable for factoring. Kaiser-Meyer-Olkin (KMO) was used to verify the sampling adequacy of the data and the result shows an overall KMO of 0.735, which indicates the factorability of the sample (Hutcheson & Sofroniou, 1999). Equally, KMO values of all the individual items on the anti-image correlation matrix are greater than 0.6 which is above the accepted benchmark of 0.5 (Coakes and Ong 2011; Field, 2013). Similarly, Bartlett's Test of Sphericity = 484.413 and is significant at p value of 0.000. This suggests that the data for the dependent variable (CI) is adequate for factor analysis. The factor loadings on the items range from 0.700 to 0.893 and thus, all these items are satisfactory. However, item CI3 was deleted due to low

commonality and its deletion resulted in an increase in the total variance explained from 64.70% to 70.55% (Appendix I).

Table 5.13
Factor Analysis – Dependent Variable (Continuance Intention)

			Component	
Code	**Item**	**Communality**	**1**	**2**
CI6	To improve job skills	.743	.858	
CI7	To enable learn new job skills	.733	.856	
CI5	Continuous usage intention	.633	.700	
CI4	Willingness to use at all time	.517	.598	
CI1	Intention to use at all time	.809		.893
CI2	Prediction to use in the future	.798		.876
	Eigen value		2.985	1.248
	Percentage of variance (70.55%)		49.752	20.797
	KMO			.735
	Bartlett's Test of Sphericity			484.413
	Significance			.000

The result of the PCA yielded two component factors with eigenvalue exceeding 1 for each. In aggregate, the two components had accounted for 70.55% of the total variance explained exceeding the recommended minimum of 60% (Hair et al., 2010). The two components were renamed based on the item that has the highest loading (Hair et al., 2010). Thus, the two extracted components were named as follows: (1) CI6 – To improve job skills and (2) CI1 – Intention to use at all time. Therefore, these two components are regarded as emerging dimensions of the dependent variable, but they would not be used in subsequent tests in the study because the initial objective of the study was to measure CI as one dimensional as found in past studies.

5.7.2 Independent Variables

There are four independent variables in this study, which include: PU, PEOU, PIQ and PE. Each of the variables is being measured by a number of items. For instance, PU and PEOU are measured with six items each, PIQ has 10 items and PE with seven

items. In aggregate, the entire items for the four independent variables are 29 items. The following discussions contain the results of the factor analyses for all the independent variables of the study.

5.7.2.1 Perceived Usefulness

To start with the PU, initial examination of the correlation matrix was conducted to ascertain the suitability for factoring and a cross-look at the correlation matrix clearly displays that all the coefficients are in excess of 0.3. Secondly, Kaiser-Meyer-Olkin (KMO) was used to verify the sampling adequacy of the data and the result shows an overall KMO of 0.687, which is within the acceptable minimum value of 0.60 (Hutcheson & Sofroniou, 1999). Equally, KMO values for all the individual items on the anti-image correlation matrix are greater than 0.6 which is above the accepted benchmark of 0.5 (Coakes & Ong, 2011; Field, 2013).

Furthermore, Bartlett's Test of Sphericity is equal to 197.176 and is significant at p value of 0.000 which strongly supports the factorability. Moreover, the factor loadings on the items are 0.787, 0.859, 0.853 for PU2, PU3 and PU4 respectively. However, PU1, PU5 and PU6 were deleted due to low communalities among these three items. As a result, an increase in the total variance explained grossly rose from 47.68% to 69.52% (Appendix I).

Additionally, the result of the PCA has shown the presence of only one component with an eigenvalue value that exceeds 1. The extracted component was named PU and the total variance explained is 69.52%.

Table 5.14
Factor Analysis – Independent Variable (Perceived Usefulness)

Code	Item	Communality	Component
			1
PU3	It enhances productivity of work	.737	.859
PU4	It enhances effectiveness in job	.728	.853
PU2	It improves performance on the job	.620	.787
	Eigen value		2.085
	Percentage of variance		69.521
	KMO		.687
	Bartlett's Test of Sphericity		197.176
	Significance		.000

5.7.2.2 Perceived Ease of Use

Though the data for PEOU seems to be short formed, but at least it has passed the threshold. This is evidence from significance level of 0.000 of Bartlett's Test of Sphericity and 0.500 for the overall KMO. Additionally, the correlation matrix shows that all the coefficients are in excess of 0.3. However, the majority of the items (PEOU1, PEOU2, PEOU3 and PEOU6) were deleted due to low communalities as they failed to attain the minimum cutoff value of 0.5. For the factor loadings, both the two items that remained have the same value of factor loadings. As a result, the result of the PCA yielded only one component that accounted for 77.28% of the total variance with an eigenvalue of greater than 1.

Table 5.15
Factor Analysis – Independent Variable (Perceived Ease of Use)

Code	Item	Communality	Component 1
PEOU4	Flexible to use	.733	.879
PEOU5	Easy to be skillful	.733	.879
	Eigen value		1.546
	Percentage of variance		77.28
	KMO		.500
	Bartlett's Test of Sphericity		80.762
	Significance		.000

5.7.2.3 Perceived Information Quality

Principal Component Analysis was conducted for the items in PIQ with a view to ascertain the components that actually measure the variable. The results of the analysis showed that two components with eigenvalues greater than 1 were extracted. Meanwhile, at the initial stage, item PIQ2, PIQ6 and PIQ8 were loaded on more than one component and hence, were deleted accordingly. Similarly, the communality table from the analysis shows that the values for PIQ1 and PIQ7 were below the minimum threshold of 0.50 suggested in the literature and hence, such items were also removed. The PCA was carried out again and suddenly the communalities for all the remaining items increased to the desired minimum threshold and the factor loadings range from 0.714 to 0.891. The Kaiser-Meyer-Olkin (KMO) is 0.575 and thus, had reached the minimum acceptable value of 0.50 (Field, 2013). Similarly, the total variance explained of the two components extracted increased to 66.66% from an initial value of 50.77%. Additionally, the two components were renamed based on the item that has the highest loading (Hair et al., 2010). Additionally, the two extracted components were named as follows: (1) PIQ4 – Accurate information (2) PIQ9 – Current and up-to-date information. Equally, the same as in CI, the two components

are dimension of the PIQ, but would not be used in subsequent analysis tests in the study because the initial objective of the study was to measure and hypothesized PIQ as one dimensional as obtainable in previous studies.

Table 5.16
Factor Analysis – Independent Variable (Perceived Information Quality)

			Component	
Code	**Item**	**Communality**	**1**	**2**
PIQ4	Accurate information	.658	.811	
PIQ5	Timely information	.582	.758	
PIQ3	Readability of Information	.511	.714	
PIQ9	Current and up-to-date	.793		.891
PIQ10	Concise and clear	.789		.886
	Eigen value		1.839	1.494
	Percentage of variance (66.66%)		36.78	29.88
	KMO			.575
	Bartlett's Test of Sphericity			187.268
	Significance			.000

5.7.2.4 Perceived Enjoyment

Table 5.17 displays the result of PE variable that was measured with seven items. In the first place, the suitability of the data for factor analysis was examined and found out that all the requirements were met. This is evidenced from the correlation matrix which showcases the presence of coefficients with values greater than 0.3.

The Kaiser-Meyer-Olkin (KMO) used to verify the sampling adequacy of the data shows an overall KMO of 0.788, which indicates the factorability of the sample (Hutcheson & Sofroniou, 1999). Equally, checking the values of all the individual items on the anti-image correlation matrix indicates that all the values are greater than 0.7 which is above the accepted benchmark of 0.5 (Coakes and Ong 2011; Field, 2013). Similarly, Bartlett's Test of Sphericity = 502.754 and is significant at p value

of 0.000. The factor loadings on the items range from 0.816 to 0.897 and thus, all these items are satisfactory. However, item PE1, PE6 and PE7 were deleted due to low communalities which yield an increase in the total variance explained to 73.497% Appendix I).

Table 5.17
Factor Analysis – Independent Variable (Perceived Enjoyment)

			Component
Code	**Item**	**Communality**	**1**
PE4	It is exciting	.805	.897
PE3	It is pleasurable	.769	.877
PE2	It is pleasant	.699	.836
PE5	It is enjoyable	.667	.816
	Eigen value		2.940
	Percentage of variance		73.497
	KMO		.788
	Bartlett's Test of Sphericity		502.754
	Significance		0.000

5.7.3 Moderating Variable

Table 5.18 presents the results of factor analysis for CSE as a moderating factor. In the initial stage, the moderating variable was evaluated with 10 items which was later subjected to PCA. Based on the assessment, it was found suitable for factorability. The items have factor loadings that range from 0.797 to 0.749. However, six items: CSE2, CSE4, CSE5, CSE6, CSE7 and CSE10 were deleted due to low communalities. As a result, the deleted items made the total variance explained to increase.

Meanwhile, before the conduct of factor analysis, the KMO for measuring the sampling adequacy shows an overall value of 0.815 which has exceeded the minimum cutoff value of 0.50 (Field, 2013). Additionally, inspection of the correlation matrix

reveals that most of the coefficients are above the minimum benchmark of 0.3 and Bartlett's Test of Sphericity is also significant at a p value of 0.000, thereby supporting the factorability. Lastly, the PCA shows the existence of one extracted factor with a total variance explained of 58.34%.

Table 5.18
Result of Factor Analysis – Moderating Variable (Computer Self-Efficacy)

			Component
Code	**Item**	**Communality**	**1**
CSE1		.635	.797
CSE3		.592	.770
CSE8		.568	.754
CSE10		.560	.749
CSE9		.561	.749
	Eigen value		2.917
	Percentage of variance		58.341
	KMO		.815
	Bartlett's Test of Sphericity		347.698
	Significance		.000

5.8 Basic Assumptions of Multiple Regression Analysis

5.8.1 Sample Sizes

The issue of sample size in survey studies is very important due to its relevance in generalization of results. It was argued in the literature that small sample size could not be sufficient enough to generalize research findings in multiple regression analysis and for that reason; Tabachnick and Fidell (2007) came up with a formula to be used in calculating sample size. The formula is: N>50+8M, where M stands for the total number of independent variables and N represents the total number of observations. Thus, given the total number of usable observations in this study 231 (as indicated in Table 5.1) and the total number of the independent variables is five, then N>90. Therefore, this means the sample size of this study is enough and suitable for regression analysis.

5.8.2 Test of Normality

Normality test is an essential assumption to be fulfilled in most statistical analysis. Specifically, it is more mandatory in parametric statistical analysis that data must be normally distributed. Field (2013) held that proper assessment and stronger conclusion could only be made on research findings when data are normally distributed. In view of this, Hair et al. (2010) and Pallant (2013) recommends that normality of data should be checked before conducting multiple regression analysis. Also, Tabachnick and Fidell (2007) stressed that normality of each variable should be met for the purpose of regression analysis.

In statistical analysis, assessment of normality could be ascertained either through graphical or statistical method. In graphical method, histogram residual plots are used and data are assumed to be normally distributed when the bars on the histogram make a bell shape or normal curve (Tabachnick & Fidell, 2007). Statistically, skewness and kurtosis are the basic yardsticks that are being used in assessing the normal distribution. The data are assumed to be normally distributed when the values of both the skewness and kurtosis are close to zero (Razali & Wah, 2011). Also, the values of skewness and kurtosis can either be positive or negative and in some instances, it can be undefined, depending on the nature of the distribution (Tabachnick & Fidell, 2007). In addition, according to Hair et al (2010), the critical values of skewness and kurtosis are ±1.96 for 5% level of significance and ±2.58 at 1% level of significance.

In view of the above recommendations and to ensure that normality is thoroughly checked in this study, a descriptive diagnostic check was made using skewness and kurtosis tests and the result is presented in Table 5.19. A look at the values on the

table clearly shows that normality has been attained because all the values of the skewness and kurtosis were within the range of ±1.96. Lastly, it is worth to know that the variables were calculated and measured using mean.

Table 5.19
Normality Test - Skewness and Kurtosis

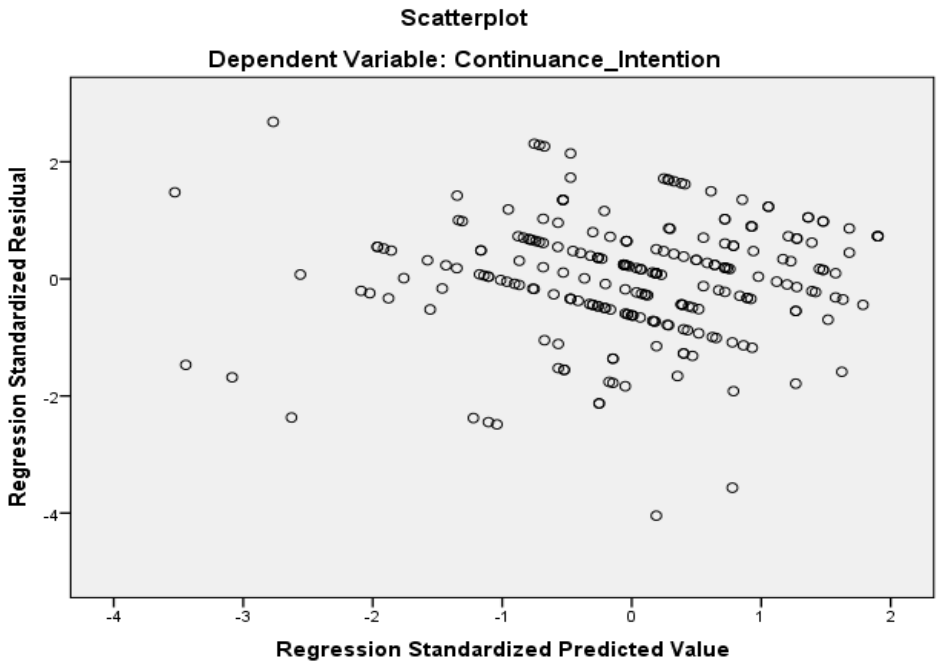
Variables	Statistics					
	Min	**Max**	**Mean**	**SD**	**Skewness**	**Kurtosis**
Perceived Usefulness	2.83	5.00	4.39	0.43	-0.57	0.45
Perceived Ease of Use	2.17	5.00	4.10	0.59	-0.95	1.56
Perceived Information Quality	2.80	5.00	4.11	0.44	-0.26	-0.35
Perceived Enjoyment	1.86	5.00	3.85	0.65	-0.55	0.46
Computer Self-Efficacy	1.90	5.00	3.84	0.65	-0.89	0.53
Continuance Intention	2.57	5.00	4.26	0.46	-0.72	1.51

Furthermore, having met the requirement for normality of data using skewness and kurtosis as indicated in Table 5.19 above, still there is a need to further check the normality with other methods. As such, Shaprio-Wilk test and Normal Q-Q plots were used. Interestingly, the normal Q-Q plots (Appendix J) showed that the data for this study is normally distributed as the dots for all the variables fall along the diagonal lines. However, the result for Shapiro-Wilk test does not provide evidence for the normality and hence its report has been made. Nevertheless, since skewness and kurtosis (statistically) and Normal Q-Q plots (graphically) had both provided evidence for fulfillment of the normality of data, it is adequate to declare that the data of this study are normally distributed.

5.8.3 Test of Linearity

In multiple regression analysis, it is assumed that the variables are related to one another in a linear style (Meyers, Gamst, & Guarino, 2006). In other words, the presence of linear relationship or straight line between the dependent variable and

independent variables signifies that linearity is achieved. Linearity can be assessed through graphical or statistical method. Statistically, Pearson Correlation Coefficients can be used to assess the degree of linearity between two variables (Hair, et al., 2010). Equally, residual scatter plot is also a measure of assessing the linearity assumption in a study. Therefore, to evaluate and satisfy this linearity assumption, this study uses residual scatter plot due to its common use among researchers and in assessing linearity between two variables (Meyer et al., 2006). In this method, the residuals are expected to scatter around zero and is also required that the concentration of the scores should be at point zero (Flury & Riedwyl, 1998). A glance at Figure 5.1 has confirmed that the residual scores of this study are scattered around zero and with much concentration within the zero point. In this regard, it is rightly assumed that linearity assumption has been fulfilled. Besides, further assumption of this method also requires that the residuals should form a straight line connection with the dependent variable and equally, Figure 5.1 has also indicated the fulfillment of this requirement.



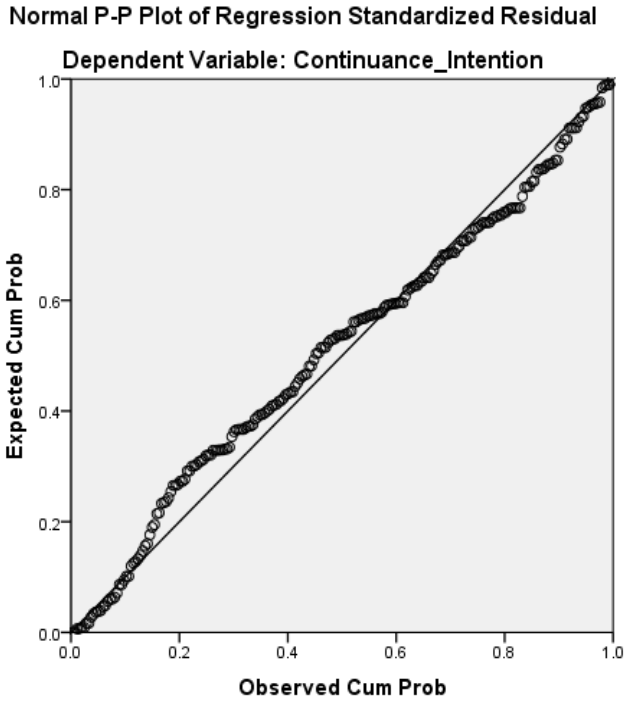


Figure 5.1

Residual plots between Independent Variables and Dependent Variable

5.8.4 Multicollinearity Test

In statistics, multicollinearity refers to the degree or extent of relationship that exist between the independent variables in a given study. In other words, it is a situation in which two or more independent variables are highly associated (Sekaran & Bougie, 2013). According to Keith (2014), multicollinearity occurs when there is a high correlation between independent variables and when these variables are highly correlated with each other, it automatically results in an increase in standard errors of the variable coefficients which will in turn affect some of them to be statistically insignificant. Consequently, this will have negative effects on the predictive power of the research model and thereby undermine the research findings.

In this study, Variance Inflation Factor (VIF) and tolerance level of the independent variables were computed and examined through the use of regression to test the presence of multicollinearity. According to Hair et al. (2010), when VIF and tolerance level values exceed 10 and 0.10 respectively, it indicates the presence of multicollinearity. However, Table 5.20 shows that none of the values for tolerance and VIF exceed these thresholds. Based on this, the issue of multicollinearity does not exist among the independent variables.

Table 5.20
Tolerance and Variance Inflation Factor

	Collinearity Statistics	
Independent Variables	**Tolerance**	**VIF**
Perceived Usefulness	.661	1.514
Perceived Ease of Use	.501	1.998
Perceived Information Quality	.674	1.485
Perceived Enjoyment	.570	1.753
Computer Self-efficacy	.616	1.622

5.8.5 Homoscedasticity

The assumption of homoscedasticity in multiple regression analysis is very important to examine and ensure that is satisfied. According to Hair, et al. (2010) homoscedasticity is attained when the variance of the dependent variable on the regression line is approximately equal for all values at different levels of the independent variables. Homoscedasticity can simply be inspected on the scatter plot of the regression residuals. Therefore, referring back to Figure 5.1 it clearly shows that the width of the band for the residuals along the diagonal line is almost the same at different levels. Therefore, the residual plots in Figure 5.1 designates that the assumption of homoscedasticity has been satisfied since the residual plot is closely

around the horizontal line at different intervals. As such, the assumption of homoscedasticity has been attained in this study.

5.9 Reliability Test

After achieving the validity test of the study variables through factor analysis, reliability test was conducted to measure the internal consistency of the items on the instrument. Reliability is the degree to which measurements are dependable or consistent when measured at dissimilar point in time (Sekaran & Bougie, 2013). Commonly, Cronbach's alpha coefficient is being used among researchers to test the inter-item consistency of research instruments. In view of this, the Cronbach's alpha coefficient was also used in this study to test the internal consistency of the items on the research instrument. Normally, a higher value of Cronbach's alpha is required for a group of items that measure the same variable. Most studies recommended that the Cronbach's alpha should be greater or equals to 0.70, however a value of 0.60 to 0.70 is also considered acceptable (Sekaran & Bougie 2013; Hair et al., 2010). Furthermore, Coakes and Ong (2011) and Crammer (2003) suggested that Cronbach's alpha values of 0.5 and above are also considered acceptable. Table 5.21 presents the summary of reliability test for all the variables that range from 0.552 to 0.876 which have exceeded the minimum acceptable threshold of 0.5 and thus, the measures are reliable (Appendix K).

Table 5.21
Summary of Reliability Test

Variable	No of Items	Cronbach's alpha
Continuance Intention	6	.795
Perceived Usefulness	3	.780
Perceived Ease of Use	2	.702
Perceived Information Quality	5	.552
Perceived Enjoyment	4	.876
Computer Self-Efficacy	5	.819

In addition to determining the reliability of the instrument, all the variables were examined for validity. Bahtti and Sundram (2015) defined validity as the process of testing whether the research instrument of a particular study truly measures what was intended to measure. There are several methods or approaches that are being used by researchers to validate an instrument, but the two major ways of validity test are content and construct validity (Field, 2013).

Content validity is measured through face validity whereby some experts within the field under study are consulted to judge on the appropriateness of the items used in measuring the constructs. In this study, the validity of the research instrument was verified and validated by experts and professionals in information systems and federal hospital accounts department respectively. The validity was aimed in such that, the former check to verify the suitability of the instrument and the later ensured that the questions on the instrument are within the language understandability of the respondents in Nigerian federal hospitals. Consequently, valued suggestions were offered by them and hence, amendments were made accordingly. Next is the construct validity, and this involves the use of factor analysis to examine the interrelationship among variables with a view to know the extent the results from a particular measure fit the theory (Bahtti and Sundram (2015). In this study, factor analysis using

principal factor analysis was extensively discussed in the earlier sections and the factorability of the study was attained.

5.10 Correlation Test

Correlation analysis is a statistical technique that is used to measure the strength of association between two metric variables (Bhatti & Sundram, 2015). The main purpose of running a correlation analysis is to examine the relationships between all the independent variables to investigate the presence of multicollinearity and between each independent variable with the dependent variable to ensure that a relationship exists between them (Coakes & Ong, 2011). Also, correlation analysis is being used to explain both the strength (high or low) and direction (positive or negative) of a linear relationship between two variables. In view of this, correlation analysis was employed in this study using Person Correlation method to assess the strength and direction of the interrelationships among the research variables. Pallant (2013) stated that a correlation of 0 indicates the non-existence of a relationship in totality. On the other hand, a correlation of 1 indicates perfect and a positive association, while a correlation of -1 designates a perfect negative relationship. In addition, Cohen (1998) provides a working guideline for interpreting the computed correlation values that are in-between 0 and 1. He suggested that r=0.10 to 0.29 as small; r=0.30 to 0.49 as medium; r=0.50 to 1 as large. It is worthy to note that, for the purpose of interpretation, the range of values stated above comprises both positive and negative numbers.

The result of the correlation analysis of this study is presented in Table 5.22. The research variables were set to a two-tailed test at two different significance levels

($p<0.01$ and $p<0.05$), the result reveal that most of the correlations between the variables are moderate with the exception of little ones that have large correlations. For instance, the correlation between PEOU and PU (r=.530), PEOU and CSE (r=.554) and CI and CSE are high. This clearly implies that, all the independent variables in this study could be related to the dependent variable in the multiple regression analysis. Overall, the result of the analysis shows that there is positive and moderate level of associations between the research variables, because there is no coefficient with a value greater or equal to 0.90 to show multicollinearity issue (Hair et al., 2010).

Table 5.22
Person's Correlation between the Study Variables

Code	Variable	PU	PEOU	PIQ	PE	CSE	CI
PU	Perceived Usefulness	1					
PEOU	Perceived Ease of Use	.530**	1				
PIQ	Perceived Information Quality	.424**	.416**	1			
PE	Perceived Enjoyment	.416**	.589**	.480**	1		
CSE	Computer Self-Efficacy	.409**	.554**	.447**	.483**	1	
CI	Continuance Intention	.379**	.471**	.468**	.322**	.519**	1

**. Correlation is significant at the 0.01 level (2-tailed)

5.11 Multiple Regression Analysis and Hypothesis Testing

Multiple regression analysis is a statistical technique whereby the levels of relationships between dependent and independent variables are assessed (Field, 2013). In other words, multiple regression analysis is a method that measures the degree or extent of the relationship between the dependent and independent variables (Sekaran & Bougie, 2013). Also, it shows the relative importance or value of each of the independent variables in predicting the dependent variable. Whenever independent variables are jointly regressed against the dependent variable, the individual size of

each of the regression coefficients will confirm or explain the effect of change that occurs on the outcome variable as a result of a unit increase in an independent variable (Zikmud et al., 2010; Sekaran & Bougie, 2013). Mathematically, regression analysis is an equation that represents the best prediction of dependent variable from several independent variables (Coakes & Ong, 2011). The three major types of regression models are the standard model, hierarchical model and stepwise regression. The standard model is used in examining the relationship of a whole set of independent variables on the dependent variable. Hierarchical regression is a process where the predicted variables are entered into the model on some external criterion such like a theoretical model (Coakes & Ong, 2011; Field, 2013). However, the choice of a particular model depends on the research objectives of the study.

In this study, multiple regression analysis was employed to test the research hypotheses that explain the extent of relationships that exist between the independent variables: PU, PEOU, PIQ, PE and the dependent variable - CI. Nonetheless, before the conduct of the regression analysis, certain statistical assumptions are expected to be fulfilled such like: sample size requirement, normality of data, linearity, multicollinearity and homoscedasticity. It could be recalled that these statistical assumptions have already been assessed and fully satisfied in section 5.7 of this chapter. Multiple regression analysis was conducted and the outcome of the analysis was used for answering the research questions of this study.

5.11.1 Direct: Multiple Regression Analysis and Hypothesis Testing between the Perceived Usefulness, Perceived Ease of Use, Perceived Information Quality, Perceived Enjoyment and Continuance Intention

In this study, multiple regression analysis was carried out to investigate the relationship between the predicting variables and the outcome variable. The result is presented on Table 5.23. Firstly, the result has expressed the regression equation with predictors that are significant with the following result: R= 0.515, R^2= 0.265, Adj. R^2= 0.252, F-Change=20.386. It can also be observed that the correlation coefficients between the criterion variable (CI) and the four predictors (PU, PEOU, PIQ and PE) is 0.515 together with predictors that accounts for 26.5% of variance in CI to use eCS among its users. Cohen (1988) classified R^2 into 3 orders as follows: 0.02 as weak, 0.13 as moderate and 0.26 as substantial. Going by this classification, the value of R^2 in the regression result is substantial. Also, the generalizability of this model in another set of sample from the same population is applicable because the R^2 dropped to the adjusted R^2 slightly from 0.265 to 0.252 recording only about 0.013 (1.3%). Furthermore, the significance of F-test (20.386, $p<0.005$) confirmed the overall prediction of the independent variables to the dependent variable. It also shows that the relationship between the predicting variables and the outcome variable is linear.

The best way to assess the regression model is to look at the contribution of each of the predictors on the dependent variable. Table 5.23 reveals that PIQ is the best predictor that predicts the dependent variable with this result (β=0.242, t=3.836). The next predictor in order of significance is PEOU (β=0.218, t=3.210) followed by PU with the result (β=0.191, t=2.862). However, PE (β=0.038, t=0.562) is not significantly related to CI among eCS users in Nigerian federal hospitals. In a nutshell, three out of the four predictors have significant influence on the dependent

variable on the directional hypotheses of this study. Therefore, this result implies that the intention to use the system is greatly determined by its PIQ, PEOU and PU and hence, H1, H2 and H3 are supported, while H4 is rejected.

Table 5.23
Multiple Regression Result between Perceived Usefulness, Perceived Ease of Use, Perceived Information Quality, Perceived Enjoyment and Continuance Intention

		Unstandardized Coefficients		**Standardized Coefficients**			**Collinearity Statistics**	
Model		**B**	**Std. Error**	**Beta**	**t**	**Sig.**	**Tolerance**	**VIF**
1	(Constant)	1.861	.286		6.505	.000		
	PU	.159	.055	.191	2.862	.005	.727	1.375
	PEOU	.129	.040	.218	3.210	.002	.702	1.424
	PIQ	.253	.066	.242	3.836	.000	.818	1.223
	PE	.028	.049	.038	.562	.575	.728	1.374
R	R^2	Adj. R^2		R^2 change		F		Sig
.515	.265	.252		.265		20.386		.000

a. Dependent variable: Continuance Intention

5.12 Hierarchical Multiple Regression and Hypothesis Testing

Hierarchical regression is a statistical technique used to predict the dependent variable with one or more independent variables in a sequential order which is based on the researcher's choice and/or previous models or theory (Tabachnick & Fidell, 2007). It is highly recommended that this model should be used in moderation effect between variables (Frazier, Baron, & Tix, 2004). Therefore, this section examines the moderating effect of CSE on the relationship between PU, PEOU and CI. Estimation of moderating effect could be carried out using a mean-centered method or simple interaction. In this study, simple interaction method was used because is simple to compute and almost gives the same result with the mean-centered method (Dawson, 2014; Dawson & Richter, 2006). Nonetheless, both the independent and dependent variables were first standardized before the product of interaction term was calculated

as recommended (Dawson, 2014). Thus, the results of the moderation test in the following sections give answers to research questions 5 and 6 of this research work.

5.11.1 Moderating Effect of Computer Self-efficacy on the Relationship between Perceived Usefulness and Continuance Intention

Hierarchical regression was conducted to test whether CSE moderates the relationship between PU and CI. The result is presented in Table 5.24. In the first place, the independent variables were entered which explained 38.9% of the variance. In step two, the moderator (CSE) was entered and the variance decreased to 24.9%. The addition of the interaction term in the third step of the analysis increased the variance explained to 27.7%. However, the significant F-Change at step 2 to 3 is not significant. Also, the interaction term between PU and CSE ($t = 1.293$, $p = 0.197$) was inspected and found not significant and as such, CSE did not moderate the relationship between PU and CI of eCS among its users in Nigerian federal hospitals. Therefore, based on this result, H5 is rejected.

Table 5.24
Hierarchical Regression Result: The Moderating Effect of Computer Self-efficacy on the Relationship between Perceived Usefulness and Continuance Intention

Independent Variables	**Std Beta Step 1**	**Std Beta Step 2**	**Std Beta Step 3**
PU	.389	.249	.277
CSE		.368	.382
Interaction:			
PU*CSE			.082
R^2	.152	.267	.273
Adjusted R^2	.148	.261	.263
F Change	40.915	41.595	28.369
Sig. Change	.000	.000	.197

5.11.2 Moderating Effect of Computer Self-efficacy on the Relationship between Perceived Ease of Use and Continuance Intention

The next moderation test is the result of the moderating effect of CSE on the relationship between PEOU and CI. Table 5.25 presents the hierarchical regression analysis results. The independent variables were first entered in the first step of the regression, explaining 39.1% of the variance. In the second step, the CSE was inserted which resulted in a decrease in the total variance explained down to 23.3%. The interaction term was added in the third step and it resulted in a slight increase to 24.6% of the total variance explained. Nonetheless, the significant F-Change at step 1 to 2 and 2 to 3 are not significant. Also, the interaction term between PEOU and CSE ($t = 0.564$, $p = 0.573$) was inspected and found not significant and as such, CSE did not moderate the relationship between PEOU and CI among eCS users in Nigerian federal hospitals and hence, H6 is rejected.

Table 5.25
Hierarchical Regression Result: The Moderating Effect of Computer Self-efficacy on the Relationship between Perceived Ease of Use and Continuance Intention

Independent Variables	**Std Beta Step 1**	**Std Beta Step 2**	**Std Beta Step 3**
PEOU	.391	.233	.246
CSE		.361	.378
Interaction:			
PEOU*CSE			.038
R^2	.153	.258	.259
Adjusted R^2	.149	.252	.250
F Change	41.246	39..697	26.491
Sig. Change	.000	.000	.573

The summary of the entire hypotheses for both the direct and indirect relationship is presented in Table 5.26.

Table 5.26
Summary of Hypotheses Testing

Hypothesis	Statement	Decision
H1	Perceived usefulness significantly influences users' continuance intention to use e-collection system in Nigerian federal hospitals	**Supported**
H2	Perceived ease of use significantly influences users' continuance intention to use e-collection system in Nigerian federal hospitals	**Supported**
H3	Perceived information quality significantly influences users' continuance intention to use e-collection systems in Nigerian federal hospitals	**Supported**
H4	Perceived enjoyment significantly influences users' continuance intention to use e-collection systems in Nigerian federal hospitals.	**Not Supported**
H5	Computer self-efficacy moderates the relationship between perceived usefulness and continuance intention to use e-collection system in Nigerian federal hospitals	**Not Supported**
H6	Computer self-efficacy moderates the relationship between perceived ease of use and continuance intention to use e-collection system in Nigerian federal hospitals	**Not Supported**

5.13 Conclusion

The chapter had reported the data analysis of the study and the empirical outcome therefrom. It has also provided the hypothesis testing and the decision made in respect of each hypothesis. Descriptive statistics, factor analysis and multiple regression analysis were used in this chapter to arrive at valid statistical result that could warrant discussion in the subsequent chapter so that conclusions could be drawn. In a nutshell, the result of the analysis shows that PU, PEOU and PIQ significantly influence the CI of eCS among its users in Nigerian federal hospital. However, PE was found to be unrelated and not significant in determining the CI. Furthermore, CSE has not shown any empirical support on the relationship between PU, PEOU and CI which made the two hypotheses regarding such postulation were rejected. The next chapter provides the discussion and conclusion on the research finding and also explains the implications of the study and recommendations for future studies.

CHAPTER SIX

DISCUSSION, CONCLUSION AND RECOMMENDATION

6.1 Introduction

This chapter discusses the findings of the study that was obtained from the data analysis in the previous chapter. The chapter is organized into five sections starting with the introduction, followed by a recapitulation of the study and description of the theoretical and practical implications of the study. Limitations of the study and suggestions for further studies were also discussed and conclusions were drawn therefrom.

6.2 Recapitulation of the Research Objectives

This section gives an executive summary of the research findings based on the objectives of the study. The main objective of this research work is to investigate the influence of PU, PEOU, PIQ, PE on CI to use eCS in Nigerian federal hospitals. Also, the moderating effect of CSE on the relationship between PU and CI; and between PEOU and CI were examined.

The specific objectives of this research work are: (1) To investigate the significant influence of PU on the CI to use eCS in Nigerian federal hospitals. (2) To investigate the significant influence of PEOU on the CI to use eCS in Nigerian federal hospitals. (3) To investigate the significant influence of PIQ on the CI to use eCS in Nigerian federal hospitals. (4) To investigate the significant influence of PE on the CI to use eCS in Nigerian federal hospitals. (5) To investigate the moderating effect of CSE on

the relationship between PU and CI to use eCS in Nigerian federal hospitals. (6) To investigate the moderating effect of CSE on the relationship between PEOU and CI to use eCS in Nigerian federal hospitals.

To accomplish the above stated objectives, four independent variables, namely: PU, PEOU, PIQ, PE were hypothesized to have significant influences on CI to use eCS in Nigerian hospitals. Additionally, CSE was hypothesized to moderate the relationship between PU and CI; and between PEOU and CI. The research framework of this study is supported by two IS models, namely: TAM and DeLone & McLean IS success model which postulates that individual intention is jointly influenced by PU, PEOU and PIQ. In addition, the research model was expanded to include PE as an independent variable and CSE as a moderator as stated above.

Studying the above relationships is vital in a quest to understand the CI of hospital employees to use technology in the workplace, which will equally provide the avenue for the government and management of the federal hospitals to institute appropriate ways of improving the employees' interest, acceptance and participation in technology-driven activities in the workplace.

Furthermore, the objectives of the study were achieved through the conduct of a survey that contained 231 usable participants randomly selected from the 55 Nigerian federal hospitals. The survey respondents were individual (staff) operators and supervisors of eCS from three departments: Account and Finance, Audit and IT department. Data were gathered from the sample respondents through self-administered questionnaire which yielded a valid response rate of 65%. Based on the

data gathered, six hypotheses developed and tested using multiple regression analysis and specifically, hypotheses 1-3 were supported, while 4-6 were rejected. In other words, the entire direct hypotheses (with the exception of hypothesis 4) were supported while the results for the indirect relationship were not supported in totality.

6.3 Discussion of the Research Findings

Based on the reviewed literature and conceptual framework in Chapter Two and Three respectively, four factors that influence CI were chosen to describe the phenomenon under study. The results obtained from the analysis were reported in the Chapter Five and the discussion of the research findings based on the research objectives and hypotheses have been made in the following sections.

6.3.1 The Influence of Perceived Usefulness on the Continuance Intention to Use e-Collection System

The first objective of this study is to investigate the influence of PU on the CI to use eCS in Nigerian federal hospitals. To accomplish this objective, H_1 was postulated as: *Perceived usefulness significantly influences continuance intention to use e-collection system in Nigerian federal hospitals.* The result from the multiple regression analysis supported the H_1 because it shows a significant and positive relationship between PU and CI and this signifies the influence of PU on CI to use eCS in Nigerian federal hospitals. In other words, the result revealed that the four predicting variables (PU, PEOU, PIQ and PE) were able to explain 26.5% of the model (R^2 =26.5, F-Change = 20.386) and among the four predictors, PU was found to be the least good predictor of CI ($\beta = 0.191$, $t = 2.862$).

The finding on the relationship between PU and CI in this study is consistent with most of the findings in IS studies. For instance, the result is in line with the findings of Rawstorne et al. (2000) which found that PU has a positive and significant influence on CI of technology use in hospitals as it forms part of the predicting factor on usage behavior in a hospital environment. Also, the work of Wu et al. (2008) that examines health care professionals' intention toward technology adoption of *Adverse event reporting system* in hospitals established a significant relationship between PU and CI intention to use in reporting system and the health care system in general. This study is also consistent with the findings of Prayoga and Abraham (2016) which confirmed the significant influence of PU on CI in using 'Internet of Things' (IoT) health device among IT oriented students in universities.

The study of Sambasivan et al. (2010) in Malaysian public institutions also reported a significant and positive relationship between PU and CI to use electronic procurement system. Similarly, the study of Diatmika et al. (2016) empirically proved that PU is an influential factor on continuance use intention in most AIS oriented organizations.

Consistent with this study, the study of Tella and Olasina (2014) also established a significant and positive relationship between PU and CI on the continuous use of e-payment system in Nigeria. In a similar context, the findings of Oni and Ayo (2010) affirmed that PU stands to be the most predicting factor that influences customers' CI to use e-banking platforms.

The significant influence of PU on CI in this study is also consistent with several past studies in e-learning. For instance, the study of Lai and Rushikesh (2012) that

combined TAM and DIT have established that PU is a significant factor that influences CI in electronic book application usage among university students. In a related study, Park et al. (2012) also established that PU has a strong influence on CI to use electronic mobile learning in Korean universities. The result of this study is also similar to findings of Elkaseh et al. (2016) that PU played a significant influence in predicting the intention of teachers and students to use social networking platforms in e-learning. In the same vein, the finding of Shittu et al. (2016) that studied on IT preparedness of pre-service teachers had reported a positive influence of PU on CI to utilize IT for teaching students.

Several studies in the past concerning e-commerce are also in agreement with the finding of this study. Mou et al. (2016) provided the empirical evidence of PU as an influential determinant of the CI for customers to purchase online health services. Also, in communication systems, the result from Al-Mamary and Shamsuddin (2015) was also in line with the finding of this study as it reveals a significant and positive relationship between PU and CI in the Yeminis telecommunication companies.

Based on the above discussion, it is not surprising that this study had also found PU as a significant predictor towards the continuous intention to use eCS in Nigerian federal hospitals among its users. It is obvious that the users (employee) of the system have observed the benefits of its use in executing job tasks which could relate to increased speed in job task execution, productivity and enhanced individual performance at work.

Therefore, the findings of this study indicate that positive perception of the usefulness of eCS among its users in the performance of job tasks influences CI to use the system. In other words, the more useful the system seems to be, the stronger the individual's CI to use. Even though system usage is almost compulsory for all users, however, all the surveyed hospitals are at the early stage of eCS use and the administrators of these hospitals have the choice to decide to continue or seize its usage considering the capability and interest or the level of resistance of its use by the employee (Laumer et al., 2016; Bhattacherjee, & Hikmet, 2007). Thus, it is pertinent to study the employee's CI towards the continued use of the system use in Nigerian public sector hospitals.

6.3.2 The Influence of Perceived Ease of Use on Continuance Intention to Use e-Collection System

The second objective of the study is to investigate the influence of PEOU on the CI to use eCS in Nigerian federal hospitals. This led to the formulation of H_2 which stated that: *perceived ease of use significantly influences continuance intention to use e-collection system in Nigerian federal hospitals*. As expected, the empirical result of this study shows a significant and positive relationship between PEOU and CI. Statistically, the result revealed that the four predicting variables (PU, PEOU, PIQ and PE) were able to explain 26.5% of the model (R^2 = 26.5, F-Change = 20.386) and in all the independent variables PEOU was found to be the second best predictor of CI (β = 0.218, t = 3.210) and hence, hypothesis H_2 is supported.

The above finding is consistent with the study of Pai and Huang (2011) which revealed that PEOU significantly influences individual's CI to use HeIS in hospitals. Also, the result is in line with findings of Huang, Sun, and Su (2016) which

discovered a positive and significant relationship between PEOU and CI to use health devices among patients that provides feedback for proper individual's health management.

The result of this study is also in line with the findings of most past researches in e-learning. For instance, the work of Terzis and Economides (2011) established that PEOU has a positive and significant influence on CI in the learning environment. Similarly, the findings of Cigdem and Ozturk (2016) agreed that PEOU is an influential factor in determining students' CI in e-learning.

The result of this study is also similar to the findings of Tsai et al. (2011) which reveals a positive and significant relationship between PEOU and CI in individuals that use mobile communication systems. In the same manner, this study is consistent with that of Suki and Suki (2011) which shows that PEOU is one among the key factors that influences individual intention to use 3G mobile services among mobile phone users in Malaysia. This study is also in agreement with the findings of Abdullah et al. (2016) which also shows that PEOU of hotel websites is the key influential factor that influences customers' CI in hotel bookings.

Therefore, various scholars believed that PEOU is one of the factors that contributes to individual acceptance and use of new technology. Davis et al. (1992) argued that PEOU in individuals usually determines the acceptability and use of technology. In other words, CI to use a new technology is greatly prejudiced by its user interface and complexity. Thus, a system that has good design with simple interactive features tends to influence users' intention to use. In the same view, Davis (1989), the inventor of

TAM maintained that system's ease of use in organizations is a motivational factor that increases job performance of employees. The study of Chuang, Chen, and Chen (2016) supported this assertion as their findings also revealed the significant influence of PEOU through PU on CI among employees in organizations.

In view of the above discussion, it is evident that the ability of an individual to PEOU of a system or technology determines his/her CI to accept and use it. Even though the use of eCS in most of the federal hospitals is mandatory for employees, still their behavior to use intention have a greater role to play in fostering the full adoption and use of the system in the hospitals. As such, the finding of this study is a contribution to the literature with regard to information use in public hospitals. In view of the foregoing, effective system design makes it easy for employees to have a positive mindset on technology use and acceptance which will enhance the organizational performance as a whole. As such, users of eCS that perceived greater ease of use have strong CI to use more than the ones that are skeptical.

6.3.3 The Influence of Perceived Information Quality on Continuance Intention to Use e-Collection System

The third objective of this study is to investigate the influence of PIQ on CI to use eCS among its users in Nigerian federal hospitals. This led to the third research hypothesis which states that: *Perceived information quality significantly influences continuance intention to use e-collection system in Nigerian federal hospitals*. The result from the multiple regression analysis shows that PIQ has a strong and significant influence on CI. Also, the result from this analysis revealed that the four predicting variables (PU, PEOU, PIQ and PE) were able to explain 26.5% of the

model (R^2 =26.5, F-Change = 20.386) and among the four predictors, PIQ was found to be the best predictor of CI ($\beta = 0.242$, $t = 3.836$).

The above finding is in line with some past studies that investigated the influence of information quality on the CI to use IS. For instance, the result of this study is consistent with the findings of Petter and Fruhling (2011) which confirms that information quality has significant influence on the CI to use medical IS in hospitals. Similarly, the significant influence of the PIQ on CI in this study is in agreement with the findings of Hsu et al. (2015) which found that ERP use among its users in organizations was strongly determined by the quality of information it provides.

In the same vein, the result of this study is consistent with Suryanto et al. (2016) who found that information quality significantly influences employee's intention to use management information system in organizations. The result of this study is also in agreement with the findings of Halawi et al. (2007) which had earlier established the significance of information quality in determining individual intention on knowledge management in organizations. Additionally, the prediction of the present study that PIQ is significant with CI is seen in the work of Wang and Lu (2014) which reveals that information quality is a determinant of consumers' online re-purchase CI. In the same manner, the study of Chen and Cheng (2009) revealed that information quality has a significant influence on CI in making online shopping among individuals. In addition, a recent study of Milan, Bebber and Eberle (2015) it shows that information quality has influenced the applicability of consumer online repurchases intention.

Consistent with the present study in e-learning, Rahman, Jamaludin, Mahmud, and Ghazali (2016) observed that the information quality of digital libraries has significant influence across age groups with the CI among Malaysian university students. Likewise, the findings of this study are in line with Demissie, and Rorissa (2015) which had established a significant influence of PIQ on CI to use e-learning process.

In view of the above, the findings of this study have strongly supported most of the previous studies regarding the PIQ of IS use in organizations. Therefore, this means that information quality is an influencing factor that provides the basis for IS use in organizations. In particular, information that relates to accounting system is very important in terms of accuracy, reliability and timeliness so that sound and effective decision making could be made for the overall performance of organizations. The outcome of this study is not surprising as most of the respondents came from the accounts and audit sections of the hospitals. As such, they are fully aware of the quality of financial information and will tend to rate it as the highest requirement for their intention in eCS use.

6.3.4 The Influence of Perceived Enjoyment on Continuance Intention to Use e-Collection System

The fourth objective of this study is to investigate the influence of PE on the CI to use eCS system among its users in Nigerian federal hospitals. This represents the fourth research hypothesis which states that: *Perceived enjoyment significantly influences continuance intention to use e-collection system in Nigerian federal hospitals*. The result from the multiple regression analysis shows that PE is not a significant factor that influences CI. Also, the result from this analysis revealed that the four predicting variables (PU, PEOU, PIQ and PE) were able to explain 26.5% of the model (R^2

=26.5, F-Change = 20.386) and within the four predictors, PE was the only predictor that does not influence CI ($\beta = 0.038$, $t = 0.562$).

The findings of this study contravene the results of previous studies in many IS studies. This is because, several studies in the past have shown that PE is an influencing factor that triggers individuals to accept and use new technology. Perceived enjoyment is defined as the extent of pleasure and fun an individual derives from in the use of a system or technology. In other words, it is a positive belief in using information technology. It is a construct that was incorporated into IS research by Davis (1992). He introduced the concept of PE to serve as intrinsic motivation. As such PE has been a construct of consideration in determining individual CI in the use of technology.

However, the finding of this study is not in consonance with most of the findings in the previous studies. For instance, the research work is not in agreement with the findings of Teo et al. (1999) because PE was empirically found to positively influence the usage intention of internet users to surf the internet habitually. In a similar manner, the result of Buettner (2015) also shows a positive correlation between PE and CI to in using personal innovative devices.

Also, the current study is not consistent with previous findings in e-learning studies. This is because, the findings of Alenezi et al. (2010) reveals that PE among others, influences students' intention to use e-learning systems in Saudi Arabian universities. Similarly, Wang et al. (2012) found that PE has a significant relationship with the intention to use blogging in learning process among some university students.

Consistent with these two stated studies, the findings of Teo and Noyes (2011) also established that, PE had a significant influence on users' intention to use new technology in pre-service teachers in Singapore.

The empirical evidence from the work of Igbaria et al. (1995) shows a contradictory status with the present study. This is because, in the former, PE was a significant factor that influences employee's CI to use IS in organizations. Similarly, the finding of this study is not in agreement with Pikkarainen et al. (2004) because PE was statistically found to be significant with regards to the CI of customers to use online banking services.

In a business related study, the work of Premchaiswadi and Porouhan (2012) reports that PE has a positive effect toward intention to use electronic airline ticketing by passengers. Also, the studies of Xiang et al. (2014) and Chen, Zhang, & Zhao (2015) on individual user acceptance of applications used in hedonic and utilitarian smartphones and smartphone use addiction indicate that PE has a strong influence on usage intention respectively.

Despite the significance of PE in the above studies, however, this study has not found PE as a significant factor that could influence respondent's intention to use eCS in Nigerian federal hospitals. The insignificant result between PE and CI may be explained in different ways. Firstly, one of the reasons behind this inconsistency could be from the fact that eCS use in hospitals is mandatory. Therefore, employees are required to use the system without considering their interest or acceptance. As such, the users will psychologically not feel it pleasurable in its use. Secondly, it is worth to

know that previous studies have pointed out the differences between utilitarian (mandatory) and hedonic (voluntary) environment and situations with regards to the use of systems. It was argued that the behavior of user intention is different under these two situations with specific relation to PU, PEOU and PE (Sun & Zhang, 2006b; Van der Heijden, 2004). Therefore, such issue could be the possible reason for the inconsistency of the result since most of the past studies that were conducted to investigate the significant influence of PE on the voluntary use of technology.

6.3.5 The Moderating Effect of Computer Self-Efficacy on the Relationship between Perceived Usefulness and Continuance Intention to Use of e-Collection System

The fifth objective of this study is to find out the moderating effect of CSE on the relationship between PU and CI to use eCS in Nigerian federal hospitals. This lead to the formation of the fifth research hypothesis accordingly stating that: *Computer self-efficacy moderates the influence of perceived usefulness on the continuance intention to use e-collection system in Nigerian federal hospitals.* However, this relationship was not supported in this study and thus the hypothesis was rejected (refer to Table 5.31). This implies that, the strength of the relationship between PU and CI to use is not influenced by user's CSE. Nonetheless, the result has quite deviated from the assumption that CSE is an ingredient that supports the behavior of individual toward positive perception of IS (John, 2013; Hayashi et al., 2004). The possible reason that could be argued for the deviation of this study is looking at the demographic features of the respondents. Majority of respondent representing about 61% have only two years and below experience in working with the eCS and thus, their ability to strongly determine or positively express the usefulness of the system would be very difficult. Secondly, in the context of Nigerian environment, the use of personal computers is

rare. Most employees are only opportune to use computers in the workplace. Therefore, they could not substantiate the usefulness of a computer system which will definitely impact on their CI to use the system.

6.3.6 The Moderating Effect of Computer Self-Efficacy on the Relationship between Perceived Ease of Use and Continuance Intention to Use e-Collection System

The sixth objective of this study is to investigate the moderating effect of CSE on the relationship between PEOU and CI to use eCS in Nigerian federal hospitals. To accomplish this, a hypothesis was postulated: *Computer self-efficacy moderates the influence of perceived ease of use on the continuance intention to use e-collection system in Nigerian federal hospitals.* Similar with hypothesis five, CSE could not moderate the relationship between PEOU and CI to use eCS and as such, the hypothesis was rejected (refer to Table 5.26). The hypothesis assumed that the significant positive relationship between PEOU and CI is strongly contingent with the level of CSE of individuals in organizations, but the result was on the contrary in the present study. The finding implies that CSE of an individual user of eCS has no effect between the PEOU towards usage intention. One of the possible reasons that might have caused is the computer skills and working experience background of the respondents. Since almost 76% of the respondents have only basic knowledge of computer operations, which is inadequate for an individual to possess high self-efficacy of computer use.

6.4 Research Implications and Contributions

The aim of this research work is to adapt and extend the Technology Acceptance Model (TAM) with a view to investigate and determine the extent of factors that influence CI to use eCS among its users in Nigerian federal hospitals. Theoretically, the study extended the model with two independent variables so as to empirically validate the extension. Also, the study had introduced a moderating variable to moderate the relationship between PU, PEOU and CI. Practically, this research work has contributed to the understanding of employee behavior toward continuous use intention of system in organizations. In fact, this will guide hospital's administrators and other public agencies to specifically know and improve toward the best way in which technology use and acceptance could be achieved among government employees.

6.4.1 Theoretical Implications

The result of this study provides some theoretical implications. Previous studies have shown that the two main variables (PU and PEOU) in TAM were useful in determining the CI of individuals (Karahanna & Straub, 1999; Rawstorne et al., 2000; Luarn & Lin, 2005; Rouibah & Abbas, 2006; Wu, et al., 2008; Sambasivan, et al. 2010; Oni & Ayo, 2010; Park et al., 2012; Lai & Rushikesh, 2012; Tella & Olasina, 2014; and Al-Mamary & Shamsuddin, 2015; Saadé & Bahli, 2005; Fu, et al., 2006; Hung, et al., 2006; Yaghoubi & Bahmani, 2010; Suki & Suki, 2011; Tsai, et al., 2011; Pai & Huang, 2011; Terzis & Economides, 2011; Chow, et al., 2012; Nasri & Charfeddine, 2012). Although technology acceptance and adoption studies have been widely studied with TAM, however, most studies were conducted on studying

individual voluntary use of systems and technology. Therefore, additional studies need to be done by extending the model to investigate the continuance use intention of systems in the mandated use environment.

The call for the inclusion of moderator in TAM was first suggested by Agarwal and Prasad (1998) which was later supported by Sun and Zhang (2006b) and Adeleke et al. (2014). Even though Venkatesh et al. (2003) had considered these suggestions, but only demographic variables were added in his model. It was argued that the inclusion of moderator will definitely enhance the predictive power of the TAM (Lingyun & Dong 2008). Based on these suggestions, this study finds it appropriate to contribute in expanding the treasure of knowledge by adding CSE to moderate the effect of the relationship between the two independent variables (PU and PEOU) and CI.

Another significant contribution is the context. Most of IS studies were conducted in the top developed countries and emerging developing countries in Asia (Al-Mayahi & Mansoor, 2012). Hence, the need for similar IS studies in other parts of the world such as the Middle East and African countries are of paramount importance. Nigeria is a developing economy that is geared toward a cashless economy through the use of technology at individual and organizational levels. The adoption and use of eCS in Nigerian federal hospitals is a contemporary issue that this study has tried to explore. As such, this particular study is among the pioneer IS studies that were conducted on the use of eCS in public hospitals. As such, this study has validated the application of the extended TAM in explaining the perception of technology use and adoption in Nigerian public hospitals as well as the public sector in entirety.

Moreover, the most significant contribution of this study is the use of mandatory IS use environment to investigate the behavior of system users as opposed to voluntary usage. Hence, TAM was conceptualized and extended, but with the exclusion of 'attitude' variable. This is because, since the context of the study is a mandatory setting, 'attitude' which lead to the voluntariness of users are not important for consideration (King & He, 2006). As such, 'continuance intention' is used instead of behavioral intention to investigate the usage behavior of eCS users had it been the usage is not compulsory. It is believed that examining the influencing of technology acceptance factors in IS use mandatory settings will enhance the understanding of employees' behavior toward technology use in the work place.

6.4.2 Practical Implications

The result of this study significantly contributes to the understanding of modern IS use in Nigerian public organizations. It delivers the ingredients of knowledge to policy makers in federal hospitals with a checklist of factors that seems to influence CI of employees in eCS use. These factors should be considered with a keen interest in the design and implementation of future e-government platforms within the Nigerian public sector organizations.

As expected, the findings of this study reveal the significant influence of PU, PEOU and PIQ on CI of eCS users. This implies that, three factors are useful in determining the user interest and acceptability of new technology or system in federal hospitals in Nigeria. Therefore, improvement of these sets of factors tends to be favorable for public hospital administrators to win the interest of their employees in the use and operation of eCS in the workplace. Also, the positive perception of users with regard

to the system can increase through training and retraining on the job, improved system's user interface and encouragement from the superiors to subordinates.

However, PE was found to be insignificant factor in influencing the CI of users of e-collection system despite its significance in the past studies. This shows that users of the system do not find any pleasure or fun in the course of executing their job tasks. Therefore, it can be deduced that the users of the system among the employees use and operate it as part of the mandatory requirement of the organization only. Thus, public hospital administrators should make a step forward in designing a system that is not only user friendly, but fascinating and enjoyable when working with it. One of the ways for making it enjoyable is to customize the system in such a way that users can see their 'earned points' base on their usage capacity and such points should be used in computing and paying of monthly bonuses as well as staff assessment for promotion.

Secondly, since most Nigerian federal hospitals are in a state of distress due to inadequate funding from the central government, this necessitate them to employ the use of electronic systems in cash collections, purposely meant to minimize cash mishandling and fraudulent activities within the hospital staff. In such case, adopting and the use of eCS will lead to cashless transactions within the hospital revenue unit, which will actually support the cashless policy of the federal government. In the same manner, this measure will automatically boost federal hospitals' revenue base, expose irregularities, and enhance the overall performance of the organizations.

Thirdly, this study will also be useful to National Information Technology Development Agency (NITDA) as part of its role to ensuring the implementation of e-government in Nigeria. One of the current agenda of the federal government is the continuous rolling and implementation of e-governance in Nigerian public institutions. Therefore, this study could be of value to the agency to serve as a prototype to understanding the behavior of the employee toward technology use and proffer solution on how IS in organizations could be improved.

In summary, this research work is expected to make significant contributions in the following ways:

6.4.3 Theoretical Contributions

1. The extension of Technology Acceptance Model (TAM) to incorporate PIQ and PE has enhanced the model by increasing its explanatory power.
2. The empirical validation of the significant role of PIQ as a predictor on public employee's on the continuous use intention of eCS. This is has added to the body of knowledge in IS studies.
3. The empirical validation and understanding of insignificant role of moderating role of CSE on the relationship between PU, PEOU and CI to use in a mandatory system use environment.
4. The contextual validation of extended Technology Acceptance Model (TAM) in public hospitals as a test for its applicability in other public sector organizations.

6.4.4 Practical Contributions

1. This research work enlarges the body of knowledge for the public hospital administrators in Nigeria to understand the behavior of employee with regards to technology use and acceptance.
2. The findings of this study have contributed to the understanding of public sector employee's intention in technology acceptance and use which will further guide the Nigerian government on issues that relates to IS development in all government ministries and agencies in the future.
3. Also, this study will help system developers in IT industry to promote (through effective system design) the usage of IS in Nigerian public sector organizations.
4. Lastly, the findings of this study can also help both public and private hospitals to invest in IS use for the betterment and effective performance of their respective domains.

6.5 Limitation of the Study and Frontier for Future Research

It is a norm and part of scientific research in the behavioral sciences that at the end of the study a highlight is expected on some issues of concern that have affected the reliability and validity of the research which the researcher was not able to handle because of some reasons beyond control. The limitations of this study and recommendation for future research are discussed below.

Firstly, the present study had focused on CI only as the dependent variable. The model in this study neglected 'attitude' and 'actual use' in TAM. This is because the context of the study is a mandatory setting (hospitals) where actual use is not

voluntary and attitude of users are not important for consideration. It is a well-known fact that behavioral intention is more prominent in IS voluntary use studies, hence this study used it as 'continuance intention'. The reason for operationalizing behavioral intention as continuance intention is because the focus of the study is on hospitals that are in early stage of system use. Notwithstanding, even though it is compulsory for the employee to use the system however, hospital administrators have the voluntary power to modify the system based on the capability of employees and/or the complexity of the system. In view of the foregoing limitation, it is highly recommended that in future research 'user satisfaction' as an interacting variable to examine the its influence on the CI of employees to use the system. Also, 'patient satisfaction' of the system is worthy to examine in the context of usage. It is expected that the response from the patients that use the system for the settlement of their medical bills will enable the management of the hospitals to improve the system based on their feedbacks.

Secondly, one of the limitations of this study is the absence of reliable total numbers of population for e-collection users in all the federal hospitals. This is due to inadequate use of e-government platforms in the country to keep a complete database of employees where the profile and functions of staff working in the hospitals could be sourced from their institutional websites. Instead, the researcher has no any other option that to estimate the total population based on the number of users found in the surveyed hospitals. Also, due to limited time and resources available, the study could not cover all the hospitals in every part of Nigeria, but the ones covered are adequate to represent the uncovered ones. Therefore, it is highly recommended that future study

should be carried out to cover up the remaining part of Nigeria with a view to validate the research findings in the country as a whole.

Lastly, the variance explained of CI in this study accounts for 26.5% only. This shows that there are still spaces for other variables to be added in order to explain more of the current model. In view of this, other important predictors that could explain more about the intention of users should be incorporated to expand the horizon of understanding of the study. Finally, this study is limited to Nigerian context and in particular, public hospitals. In this aspect also, future studies could be conducted in other countries that have similar context and system of hospital to test the applicability of the model.

6.6 Conclusion

The main issue that motivates the conduct of this study is to provide an understanding of the individuals' behavior towards technology use and acceptance in the Nigerian public sector with specific emphasis on hospitals. This prompted the review of previous literature on technology use and acceptance which lead to the selection of TAM and other two variables used in IS research through which the research problem was raised. Based on the problem statement, the research questions were raised and this lead to the formulation of the research hypotheses to test the relationship between the technology influencing factors and the CI of employing staff in hospital that use eCS.

Based on the analyzed data that was collected, the research concludes that three of the influencing factors (PU, PEOU and PIQ) of technology use are significantly related to

CI. However, the study could not establish the moderating effect of CSE on the relationship between PU and CI and PEOU and CI. In a nutshell, the overall achievement of this study is that, the research has succeeded in examining a contemporary issue in the AIS field with particular importance to current technology use of computerized AIS in Nigerian public hospitals.

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APPENDIX A

List of Federal Hospitals in Nigeria

No.	Name of Hospital and Location	Location	Type of Hospital	State	Geopolitical Zone
1	Abubakar Tafawa Balewa University Teaching Hospital	Bauchi	FUTH	Bauchi	North-East
2	Ahmadu Bello University Teaching Hospital	Zaria	FUTH	Kaduna	North West
3	Aminu Kano University Teaching Hospital	Kano	FUTH	Kano	North West
4	Federal Teaching Hospital	Abakaliki	FUTH	Ebonyi	South East
5	Federal Teaching Hospital, Gombe	Gombe	FUTH	Gombe	North-East
6	Irrua Specialist Teaching Hospital	Irrua	FUTH	Edo	South-South
7	Jos University Teaching Hospital	Jos	FUTH	Plateau	North-central
8	Lagos University Teaching Hospital	Lagos	FUTH	Lagos	South-West
9	National Hospital Abuja	Abuja	FUTH	FCT	FCT
10	Nnamdi Azikwe Teaching Hospital	Nnewi	FUTH	Anambra	South-East
11	Obafemi Awolowo University Teaching Hospital	Ile-Ife	FUTH	Osun	South-West
12	University of Abuja Teaching Hospital	Gwagwalada	FUTH	FCT	FCT
13	University of Benin Teaching Hospital	Benin city	FUTH	Borno	South South
14	University of Calabar Teaching Hospital	Calabar	FUTH	Bauchi	North-East
15	University of College Hospital	Ibadan	FUTH	Oyo	South-West
16	University of Ilorin Teaching Hospital	Ilorin	FUTH	Kwara	North-Central
17	University of Maiduguri Teaching Hospital	Maiduguri	FUTH	Borno	North-East
18	University of Nigeria Teaching Hospital	Ituku-Ozalla	FUTH	Enugu	South-East
19	University of Port Harcourt Teaching Hospital	Port Harcourt	FUTH	Rivers	South South
20	University of Uyo Teaching Hospital	Uyo	FUTH	Akwa Ibom	South South
21	Usman Dan Fodio University Teaching Hospital	Sokoto	FUTH	Sokoto	North West
22	Federal Medical Center, Abakaliki	Abakaliki	FMC	Ebonyi	South East
23	Federal Medical Center, Abeokuta	Abeokuta	FMC	Ogun	South-West
24	Federal Medical Center, Asaba	Asaba	FMC	Delta	South south
25	Federal Medical Center, Azare	Azare	FMC	Bauchi	North East
26	Federal Medical Center, Bida	Bida	FMC	Niger	North Central
27	Federal Medical Center, Birnin Kebbi	Birnin Kebbi	FMC	Kebbi	North West
28	Federal Medical Center, Birnin Kudu	Birnin Kudu	FMC	Jigawa	North West
29	Federal Medical Center, Ebute-Metta	Ebute-Metta	FMC	Lagos	South-West
30	Federal Medical Center, Gusau	Gusau	FMC	Zamfara	North West
31	Federal Medical Center, Ido-Ekiti	Ido-Ekiti	FMC	Ekiti	South-West

No.	Name of Hospital and Location	Location	Type of Hospital	State	Geopolitical Zone
32	Federal Medical Center, Jalingo	Jalingo	FMC	Taraba	North West
33	Federal Medical Center, Katsina	Katsina	FMC	Katsina	North West
34	Federal Medical Center, Keffi	Keffi	FMC	Nassarawa	North-Central
35	Federal Medical Center, Lokoja	Lokoja	FMC	Kogi	North-Central
36	Federal Medical Center, Makurdi	Makurdi	FMC	Benue	North-Central
37	Federal Medical Center, Nguru	Nguru	FMC	Yobe	North-East
38	Federal Medical Center, Owerri	Owerri	FMC	Imo	South-East
39	Federal Medical Center, Owo	Owo	FMC	Ondo	South-West
40	Federal Medical Center, Umuahia	Umuahia	FMC	Abia	South East
41	Federal Medical Center, Yenegoa	Yenegoa	FMC	Bayelsa	South South
42	Federal Medical Center, Yola	Yola	FMC	Adamawa	North East
43	Federal Neuro-Psychiatric Hospital, Abeokuta	Abeokuta	FSH	Ogun	South-West
44	Federal Neuro-Psychiatric Hospital, Uselu	Uselu	FSH	Edo	South South
45	Federal Neuro-Psychiatric Hospital, Calabar	Calabar	FSH	Cross river	South South
46	Federal Neuro-Psychiatric Hospital, Enugu	Enugu	FSH	Enugu	South-East
47	Federal Neuro-Psychiatric Hospital, Kaduna	Kaduna	FSH	Kaduna	North West
48	Federal Neuro-Psychiatric Hospital, Kware	Sokoto	FSH	Sokoto	North West
49	Federal Neuro-Psychiatric Hospital, Maiduguri	Maiduguri	FSH	Borno	North East
50	Federal Neuro-Psychiatric Hospital, Yaba	Yaba	FSH	Lagos	South-West
51	National Orthopedic Hospital, Dala	Dala	FSH	Kano	North West
52	National Orthopedic Hospital, Enugu	Enugu	FSH	Enugu	South-East
53	National Orthopedic Hospital, Igbobi	Igbobi	FSH	Lagos	South-West
54	National Eye Centre, Kaduna	Kaduna	FSH	Kaduna	North West
55	National Ear Centre, Kaduna	Kaduna	FSH	Kaduna	North West

Source: Federal Ministry of Health – Federal Republic of Nigeria, 2016.

APPENDIX B

Federal Hospitals by Types and Zone Location

ZONE	Federal Teaching Hospital	Federal Medical Center	Federal Specialty Hospital	Total
North-East	3	4	1	8
North-West	3	4	5	12
North-Central	2	4	0	6
South-East	3	2	2	7
South-West	3	4	3	10
South-South	5	2	2	9
F.C.T	2	1	0	3
Total	**21**	**21**	**13**	**55**

Source: Generated by the Researcher, 2016

APPENDIX C

Population and Sample of the Study – Computation

Population of the Study - Computation

ZONE	Federal Teaching Hospital	Federal Medical Center	Federal Specialist Hospital	Total
North-East	3 x 17=51	4 x 10=40	1 x 9=9	100
North-West	3 x 17=51	4 x 10=40	5 x 9=45	136
North-Central	2 x 17=34	4 x 10=40	0 x 9=0	74
South-East	3 x 17=51	2 x 10=20	2 x 9=18	89
South-West	3 x 17=51	4 x 10=40	3 x 9=27	118
South-South	5 x 17=85	2 x 10=20	2 x 9=18	123
FCT	2 x 17=34	1 x 10=10	0 x 9=0	44
Total	**357**	**210**	**117**	**684**

Source: Generated by the Researcher, 2016

Sample Size of the Study - Computation

ZONE	Federal Teaching Hospital	Federal Medical Center	Federal Specialist Hospital	Total
North-East	3 x 17=51	4 x 10=40	1 x 9=9	100
North-West	3 x 17=51	4 x 10=40	5 x 9=45	136
North-Central	2 x 17=34	4 x 10=40	0 x 9=0	74
FCT	2 x 17=34	1 x 10=10	0 x 9=0	44
Total	**170**	**130**	**54**	**354**

Source: Generated by the Researcher, 2016

APPENDIX D

Krejcie and Morgan Table for Determining Sample Size

N	*S*	*N*	*S*	*N*	*S*
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	100000	384

Source: Krejcie & Morgan, 1970

Note:
N = population size
S = sample size

APPENDIX E

Operationalization of the Research Variables

Dependent Var.	Questions	Original Questions	Modification	Source
Behavioral Intention	1. Even if eCS is not mandatory to use, I intend to continue to use it at all time in my job tasks 2. Even if eCS is not mandatory to use, I predict that I will continue to use the system at all time in my future job tasks 3. Even if eCS is not mandatory to use, I believe my interest in eCS use will continue to increase in the future 4. Even if eCS is not mandatory to use, I am willing to continue to use the system in performing my assigned duties 5. Even if eCS is not mandatory to use, I intend to continue to use it in executing my job tasks 6. Even if eCS is not mandatory to use I would like to use similar system to	1. I intend to use CHART-MASTER in my job tasks. 2. I predict that I would use CHART-MASTER at all time in my future job tasks 3. I believe my interest in CHART-MASTER use will increase in the future 4. I am willing to use Healthcare Information System 5. I intend to continue to use my mobile phone 6. The Molecule Builder or another activity in SL to help me learn about a chemistry concept 7. I am glad to learn new Healthcare Information System	Re-wordings of items to reflect e-collection system use.	Davis et al. (1989), Luarn and Lin (2005) Pai & Huang (2011) and Merchant et al. (2015).

	improve my job skills 7. I am glad to learn new techniques in my job using eCS.			
Perceived Usefulness	1. Using e-collection system enables me to carry out my duties more quickly 2. Using e-collection system improves my performance on the job 3. Using e-collection system enhances my productivity 4. Using e-collection system enhances my effectiveness in my daily work 5. Using e-collection system makes it easier for me to carry out my job tasks 6. Overall, e-collection system is useful in my job	1. Using CHART-MASTER in my job would enable me to accomplish task more quickly 2. Using e-collection system improves my performance on the job 3. Using CHART-MASTER would increase my productivity 4. Using CHART-MASTER would enhance my effectiveness on the job 5. Using CHART-MASTER would make it easier to do my job 6. I would find CHART-MASTER useful in my job.	Re-wordings of items to reflect e-collection system use.	Davis et al. (1989),
Perceived Ease of Use (PEOU)	1. Learning to operate e-collection system is easy for me 2. I find it easy to manipulate e-collection system to do what I want 3. In my interaction with e-collection system, I find it	1. Learning to operate CHART-MASTER would be easy for me 2. I would find it easy to get CHART-MASTER to do what I want it to do. 3. My interaction with CHART-MASTER would	Re-wordings of items to reflect e-collection system use.	

	clear and understandable 4. I find e-collection system flexible to use in performing my job tasks 5. It is easy for me to become skillful at using e-collection system in my work 6. I find e-collection system easy to use in the performance of my assigned duties	be clear and understandable 4. I would find CHART-MASTER to be flexible to interact with. 5. It would be easy for me to become skillful at using CHART-MASTER 6. I would find CHART-MASTER easy to use.		Davis et al. (1989),
Perceived Information Quality (PIQ)	1. Information from the e-collection systems is always available when needed 2. Information provided by e-collection system seems to be exactly as needed 3. Information from the e-collection system is readily usable 4. Information provided by e-collection system is accurate 5. Information from e-collection system is always timely 6. Information provided from e-collection system is relevant to my work 7. Information provided by e-collection system meets the needs of my job tasks	1. Information needed from (the IS) is always available. 2. The IS provides output that seems to be exactly what is needed 3. Information from (the IS) is in a form that is readily usable. 4. Though data from (the IS) may be accurate, outputs sometimes are not. 5. Information from (the IS) is always timely 6. Information available from (the IS) is important. 7. Information from (the IS) appears readable, clear and well formatted 8. Information from (the IS) is easy to understand	Re-wordings of items to reflect e-collection system use.	DeLone & McLean (2003) and Gable et al. (2008).

	8. Information provided by e-collection system is readable and understandable 9. Information from e-collection system is always up-to-date 10. Information from e-collection system appears to be concise and clear	9. Information from (the IS) is unavailable elsewhere 10. Information from (the IS) is concise		
Perceived Enjoyment (PE)	1. It is fun working with e-collection system 2. I find it pleasant when working with e-collection system 3. It is pleasurable working with e-collection system 4. I feel excited working with e-collection system 5. It is enjoyable working with e-collection system 6. I feel delighted when working with e-collection system 7. It is playful working with e-collection system	1. Using computer in my job is fun 2. Using computer in my job is pleasant 3. Using computer in my job is pleasurable 4. Using computer in my job is exciting 5. Using computer in my job is enjoyable 6. I evaluate the MIS as delightful 7. I evaluate the MIS as Playful	Change of wordings to reflect e-collection system	Igbaria et al. (1995) and Khedhaouria and Beldi (2004)

Computer Self-efficacy (CSE)	1. I found working with computer systems very easy 2. I have no difficulties in using computer software applications 3. I can learn computer software applications using built-in help facility on the system 4. I am confident in troubleshooting computer problems 5. I am very sure of my ability to use e-collection system on computers 6. I am confident in my ability to make use of e-collection system on computers 7. I find it easy with computers on learning how to use e-collection systems 8. I can work with e-collection system on computers, even if no one shows me how to do it 9. I consider myself to be a skilled e-collection system user with computers 10. I can handle computers better than most people do	1. I find working with computers very easy. 2. I find it easy to learn how to use new software. 3. I can use computer to complete a task if I had the built-in help facility for assistance 4. I feel confident troubleshooting computer problems. 5. I am very unsure of my abilities to use computers 6. I am very confident in my abilities to make use of computers. 7. I find that computers get in the way of learning. 8. I feel confident working on computer although there was no one around to tell me what to do. 9. I consider myself to be a skilled computer user. 10. I always feel I can handle computers better than others.	Change of wordings to reflect e-collection system	Compeau & Higgins, (1995), Cassidy and Eachus (2002), Wangpipatwong et al. (2008) and Ratten (2013).

APPENDIX F

Sample Copy of the Research Questionnaire

Dear Respondent,

The researcher is a (PhD Accounting) student from University Utara Malaysia (UUM) conducting a study titled "Behavioral Intention to Use e-collection Systems in Nigerian Federal Hospitals".

Please find below the questionnaire to fill, so as to enable the researcher arrives at valid conclusions.

Your participation in this study is voluntary. However, I shall be very grateful if you spare your 10-15 minutes to answer the questions.

Lastly, your honest opinion is required when filling in the questionnaire and I assure you that all information you provide would be kept confidential and strictly used for research purpose only.

Thank you in anticipation of your cooperation.

Muhammad Auwal Kabir
auwalbh27@gmail.com
+2348036060564, +2348029595072

SECTION A: Demographic Information

1.	Name of your Hospital				
2.	Department/Section/Unit				
3.	Gender	□ Male	□ Female		
4.	Age (years)	□ 18-25	□ 26-35	□ 36-45	□ Above 45
5.	Marital Status	□ Single	□ Married	□ Divorced	□ Widowed
6.	Highest Educational Qualification	□ Diploma	□ Bachelor	□ Postgraduate	□ Others ……
7.	What kind of proficiency do you have in computer skills	□ Basic computer operations	□ Software skills	□ Hardware skills	□ Networking skills
8.	As a staff, for how long have you being using this e-collection system in your hospital?				
9.	Apart from e-collection system, have you used any computer software in the performance of your duties in office?	□ Yes	□ No		

SECTION B: Main Questions

Please indicate with an appropriate tick (√) the extent of your agreement with the following statements using the appropriate scale below:

5=Strongly Agree (SA), 4=Agree (A), 3=Neutral=U, 2=Disagree (D), 1=Strongly Disagree (SD)

PERCEIVED USEFULNESS

		5	4	3	2	1
1.	Using e-collection system enables me to carry out my duties more quickly					
2.	Using e-collection system improves my performance on the job					
3.	Using e-collection system enhances my productivity					
4.	Using e-collection system enhances my effectiveness in my daily work					
5.	Using e-collection system makes it easier for me to carry out my job					
6.	Overall, e-collection system is useful in my job					

PERCEIVED EASE OF USE

		5	4	3	2	1
1.	Learning to operate e-collection system is easy for me					
2.	I find it easy to manipulate e-collection system to do what I want					
3.	In my interaction with e-collection system, I find it clear and understandable					
4.	I find e-collection system flexible to use in performing my job tasks					
5.	It is easy for me to become skillful at using e-collection system in my work					
6.	I find e-collection system easy to use in the performance of my assigned duties					

PERCEIVED INFORMATION QUALITY

		5	4	3	2	1
1.	Information from the e-collection systems is always available when needed					
2.	Information provided by e-collection system seems to be exactly as needed					
3.	Information from the e-collection system is readily usable					
4.	Information provided by e-collection system is accurate					
5.	Information from e-collection system is always timely					
6.	Information provided by e-collection system is relevant to my work					
7.	Information provided by e-collection system meets the needs of my job tasks					
8.	Information provided by e-collection system is readable and understandable					
9.	Information from e-collection system is always up-to-date					
10.	Information from e-collection system appears to be concise and clear					

PERCEIVED ENJOYMENT

		5	4	3	2	1
1.	It is fun working with e-collection system					
2.	I find it pleasant when working with e-collection system					
3.	It is pleasurable working with e-collection system					
4.	I feel excited when working with e-collection system					
5.	It is enjoyable working with e-collection system					
6.	It feel delighted working with e-collection system					
7.	It is playful when working with e-collection system					

COMPUTER SELF-EFFICACY

		5	4	3	2	1
1.	I found working with computer systems very easy					
2.	I have no difficulties in using computer software applications					
3.	I can learn computer software applications using the built-in help facility on the system					
4.	I am confident in troubleshooting computer problems					
5.	I am very sure of my ability to use e-collection system on computers					
6.	I am confident in my ability to make use of e-collection system on computers					
7.	I find it easy with computers on learning how to use e-collection system					
8.	I can work with e-collection systems on computers even if no one shows me how to do it					
9.	I consider myself to be a skilled e-collection system user with computers					
10.	I can handle computers better than most people do					

BEHAVIORAL INTENTION

		5	4	3	2	1
1.	I intend to continue to use e-collection system at all time in my job tasks					
2.	I predict that I will continue to use e-collection system at all time in my future job tasks					
3.	I believe my interest in e-collection system use will increase in the future					
4.	I am willing to continue to use e-collection system in performing my assigned duties					
5.	I intend to continue to use e-collection systems in executing my job tasks					
6.	I intend to use similar systems like e-collection system to improve my job skills					
7.	I am glad to learn new techniques in my job using e-collection systems					

APPENDIX G

Missing Value Repalcement

Result Variables

	Result Variable	N of Replaced Missing Values	Case Number of Non-Missing Values		N of Valid Cases	Creating Function
			First	Last		
1	PU3_1	1	1	263	263	SMEAN(PU3)
2	PU4_1	4	1	263	263	SMEAN(PU4)
3	PU5_1	1	1	263	263	SMEAN(PU5)
4	PEOU2_1	3	1	263	263	SMEAN(PEOU2)
5	PEOU3_1	1	1	263	263	SMEAN(PEOU3)
6	PEOU5_1	1	1	263	263	SMEAN(PEOU5)
7	PEOU6_1	2	1	263	263	SMEAN(PEOU6)
8	PIQ2_1	1	1	263	263	SMEAN(PIQ2)
9	PIQ3_1	1	1	263	263	SMEAN(PIQ3)
10	PIQ4_1	2	1	263	263	SMEAN(PIQ4)
11	PIQ5_1	1	1	263	263	SMEAN(PIQ5)
12	PIQ6_1	2	1	263	263	SMEAN(PIQ6)
13	PIQ7_1	2	1	263	263	SMEAN(PIQ7)
14	PE3_1	1	1	263	263	SMEAN(PE3)
15	PE5_1	1	1	263	263	SMEAN(PE5)
16	PE6_1	1	1	263	263	SMEAN(PE6)
17	CSE3_1	1	1	263	263	SMEAN(CSE3)
18	CSE4_1	1	1	263	263	SMEAN(CSE4)
19	CSE7_1	3	1	263	263	SMEAN(CSE7)
20	CSE8_1	1	1	263	263	SMEAN(CSE8)
21	CI7_1	1	1	263	263	SMEAN(CI7)

APPENDIX H

T-test Equality of Variance between Early and Late Respondents

Group Statistics

	GROUPING	N	Mean	Std. Deviation	Std. Error Mean
PU	1	139	4.4243	.40022	.03395
	2	92	4.3358	.47198	.04921
PEOU	1	139	4.1359	.54369	.04611
	2	92	4.0419	.65029	.06780
PIQ	1	139	4.1424	.44881	.03807
	2	92	4.0531	.42032	.04382
PE	1	139	3.8814	.60104	.05098
	2	92	3.8026	.72039	.07511
CSE	1	139	3.8533	.63262	.05366
	2	92	3.8174	.68062	.07096
CI	1	139	4.2425	.49207	.04174
	2	92	4.2764	.40284	.04200

APPENDIX I

Factor Analysis

Correlation Matrix[a]

		CI1	CI2	CI4	CI5	CI6	CI7
Correlation	CI1	1.000	.668	.343	.335	.222	.165
	CI2	.668	1.000	.349	.406	.250	.225
	CI4	.343	.349	1.000	.528	.383	.408
	CI5	.335	.406	.528	1.000	.535	.449
	CI6	.222	.250	.383	.535	1.000	.654
	CI7	.165	.225	.408	.449	.654	1.000
Sig. (1-tailed)	CI1		.000	.000	.000	.000	.006
	CI2	.000		.000	.000	.000	.000
	CI4	.000	.000		.000	.000	.000
	CI5	.000	.000	.000		.000	.000
	CI6	.000	.000	.000	.000		.000
	CI7	.006	.000	.000	.000	.000	

a. Determinant = .119

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.735
Bartlett's Test of Sphericity	Approx. Chi-Square	484.413
	Df	15
	Sig.	.000

Anti-image Matrices

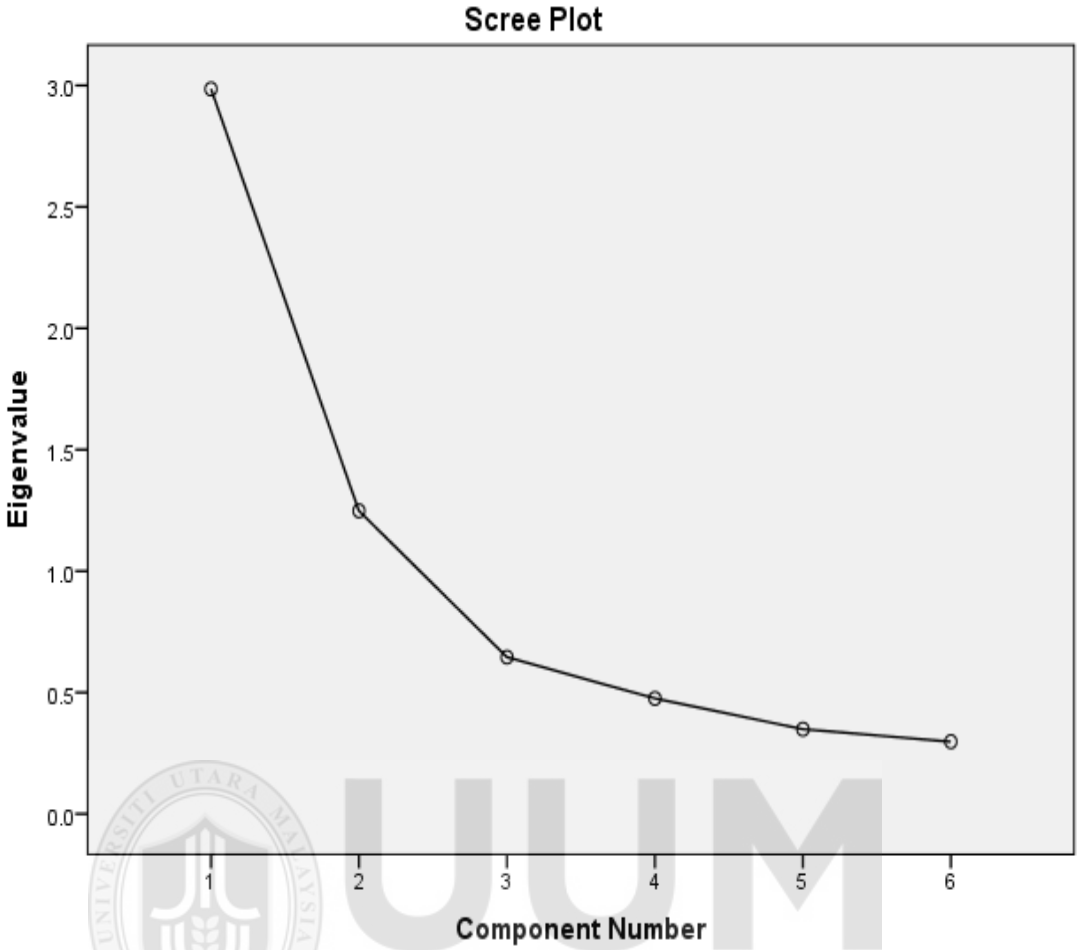
		CI1	CI2	CI4	CI5	CI6	CI7
Anti-image Covariance	CI1	.536	-.318	-.081	-.012	-.026	.036
	CI2	-.318	.513	-.028	-.097	.009	-.023
	CI4	-.081	-.028	.653	-.198	-.006	-.108
	CI5	-.012	-.097	-.198	.553	-.160	-.037
	CI6	-.026	.009	-.006	-.160	.498	-.278
	CI7	.036	-.023	-.108	-.037	-.278	.538
Anti-image Correlation	CI1	.658[a]	-.605	-.137	-.022	-.050	.068
	CI2	-.605	.677[a]	-.048	-.182	.019	-.044
	CI4	-.137	-.048	.836[a]	-.330	-.011	-.183
	CI5	-.022	-.182	-.330	.813[a]	-.305	-.068
	CI6	-.050	.019	-.011	-.305	.717[a]	-.537
	CI7	.068	-.044	-.183	-.068	-.537	.724[a]

a. Measures of Sampling Adequacy(MSA)

Communalities

	Initial	Extraction
CI1	1.000	.809
CI2	1.000	.798
CI4	1.000	.517
CI5	1.000	.633
CI6	1.000	.743
CI7	1.000	.733

Extraction Method: Principal Component Analysis.



Component Matrix[a]

	Component	
	1	2
CI5	.787	
CI6	.733	-.454
CI4	.718	
CI7	.694	-.501
CI2	.667	.594
CI1	.621	.650

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

Rotated Component Matrix[a]

	Component	
	1	2
CI6	.858	
CI7	.856	
CI5	.700	.379
CI4	.598	.400
CI1		.893
CI2		.876

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Correlation Matrix[a]

		PU2	PU3	PU4
Correlation	PU2	1.000	.505	.494
	PU3	.505	1.000	.626
	PU4	.494	.626	1.000
Sig. (1-tailed)	PU2		.000	.000
	PU3	.000		.000
	PU4	.000	.000	

a. Determinant = .421

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.687
Bartlett's Test of Sphericity	Approx. Chi-Square	197.176
	df	3
	Sig.	.000

Anti-image Matrices

		PU2	PU3	PU4
Anti-image Covariance	PU2	.693	-.179	-.165
	PU3	-.179	.557	-.282
	PU4	-.165	-.282	.565
Anti-image Correlation	PU2	.765[a]	-.288	-.264
	PU3	-.288	.659[a]	-.502
	PU4	-.264	-.502	.664[a]

a. Measures of Sampling Adequacy(MSA)

Communalities

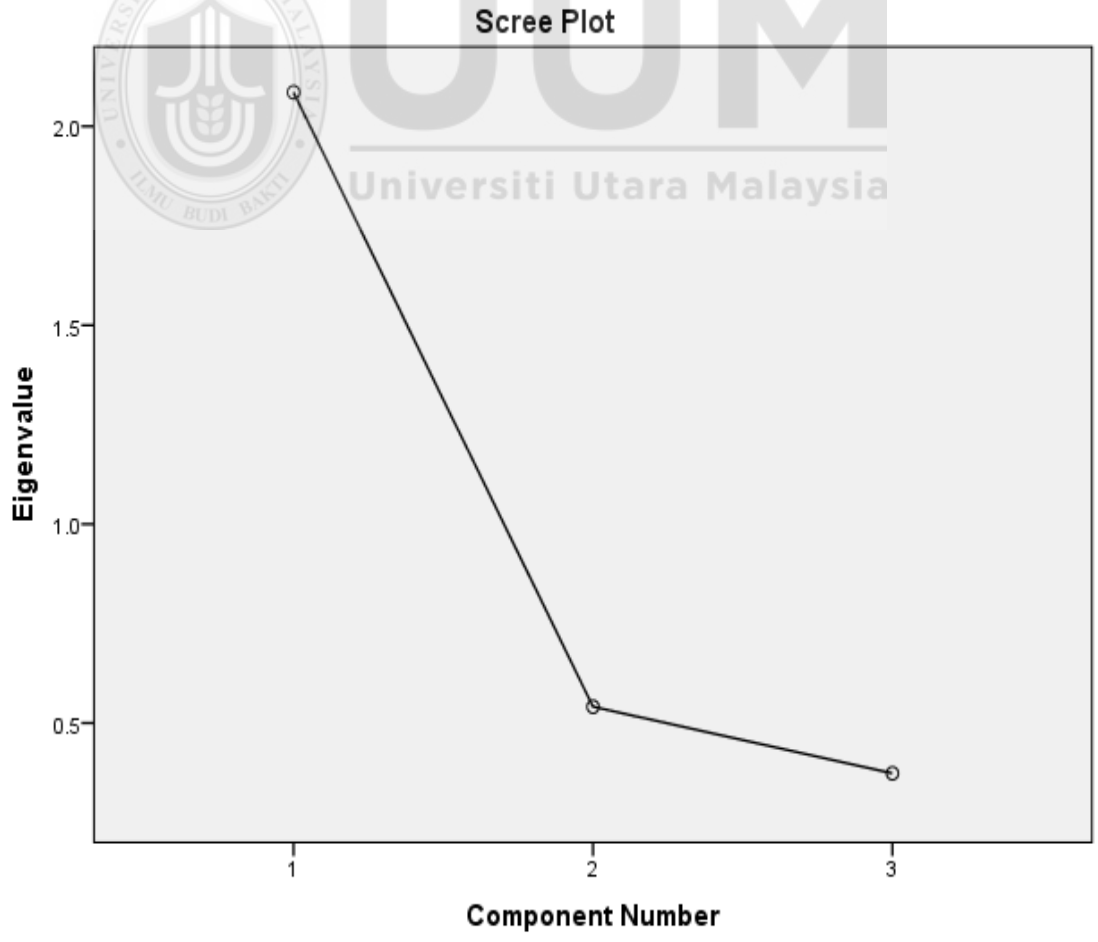
	Initial	Extraction
PU2	1.000	.620
PU3	1.000	.737
PU4	1.000	.728

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.085	69.516	69.516	2.085	69.516	69.516
2	.541	18.035	87.551			
3	.373	12.449	100.000			

Extraction Method: Principal Component Analysis.



Component Matrix[a]

	Component
	1
PU3	.859
PU4	.853
PU2	.787

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Correlation Matrix[a]

		PEOU4	PEOU5
Correlation	PEOU4	1.000	.546
	PEOU5	.546	1.000
Sig. (1-tailed)	PEOU4		.000
	PEOU5	.000	

a. Determinant = .702

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.500
Bartlett's Test of Sphericity	Approx. Chi-Square	80.762
	df	1
	Sig.	.000

Anti-image Matrices

		PEOU4	PEOU5
Anti-image Covariance	PEOU4	.702	-.383
	PEOU5	-.383	.702
Anti-image Correlation	PEOU4	.500[a]	-.546
	PEOU5	-.546	.500[a]

a. Measures of Sampling Adequacy(MSA)

Communalities

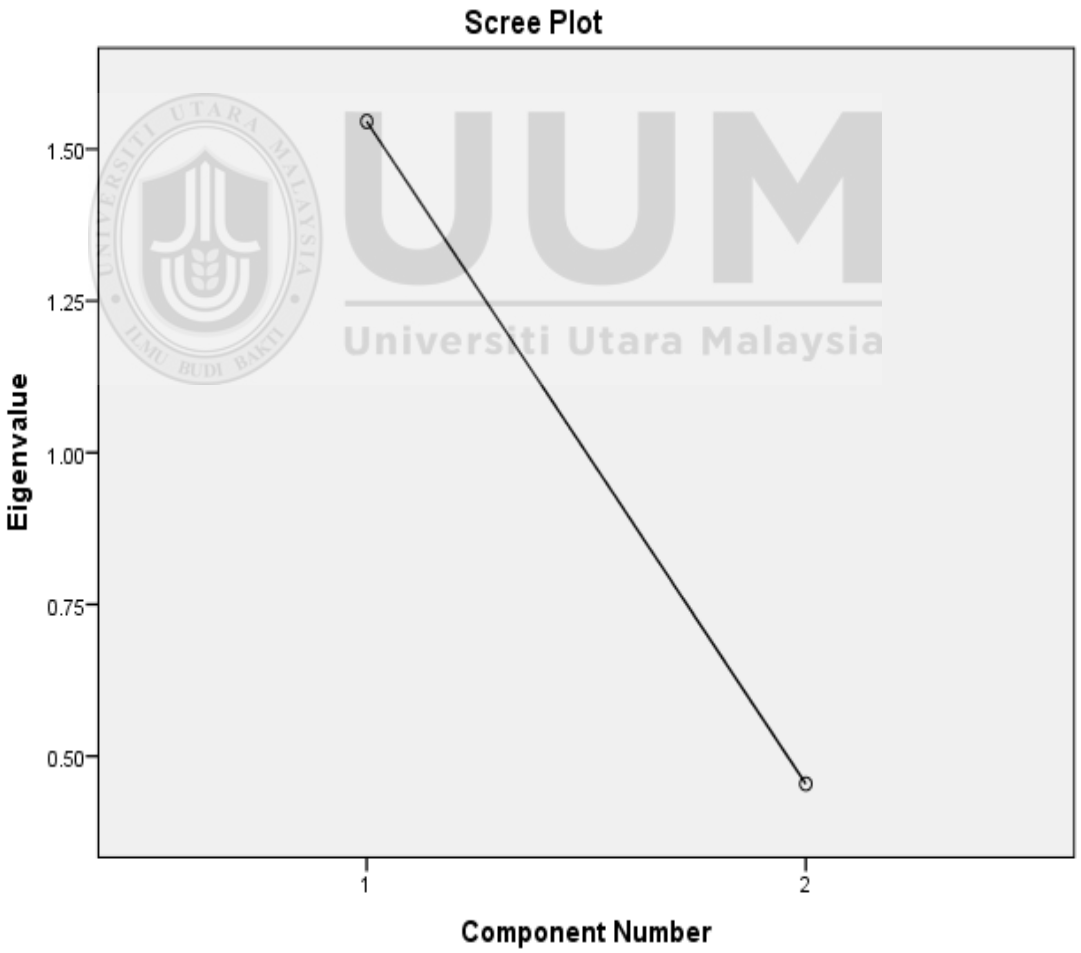
	Initial	Extraction
PEOU4	1.000	.773
PEOU5	1.000	.773

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.546	77.283	77.283	1.546	77.283	77.283
2	.454	22.717	100.000			

Extraction Method: Principal Component Analysis.



Component Matrix[a]

	Component
	1
PEOU5	.879
PEOU4	.879

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Correlation Matrix[a]

		PIQ3	PIQ4	PIQ5	PIQ9	PIQ10
Correlation	PIQ3	1.000	.375	.302	.059	.062
	PIQ4	.375	1.000	.438	.013	.065
	PIQ5	.302	.438	1.000	.070	.109
	PIQ9	.059	.013	.070	1.000	.583
	PIQ10	.062	.065	.109	.583	1.000
Sig. (1-tailed)	PIQ3		.000	.000	.186	.176
	PIQ4	.000		.000	.425	.162
	PIQ5	.000	.000		.145	.050
	PIQ9	.186	.425	.145		.000
	PIQ10	.176	.162	.050	.000	

a. Determinant = .439

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.575
Bartlett's Test of Sphericity	Approx. Chi-Square	187.268
	df	10
	Sig.	.000

Anti-image Matrices

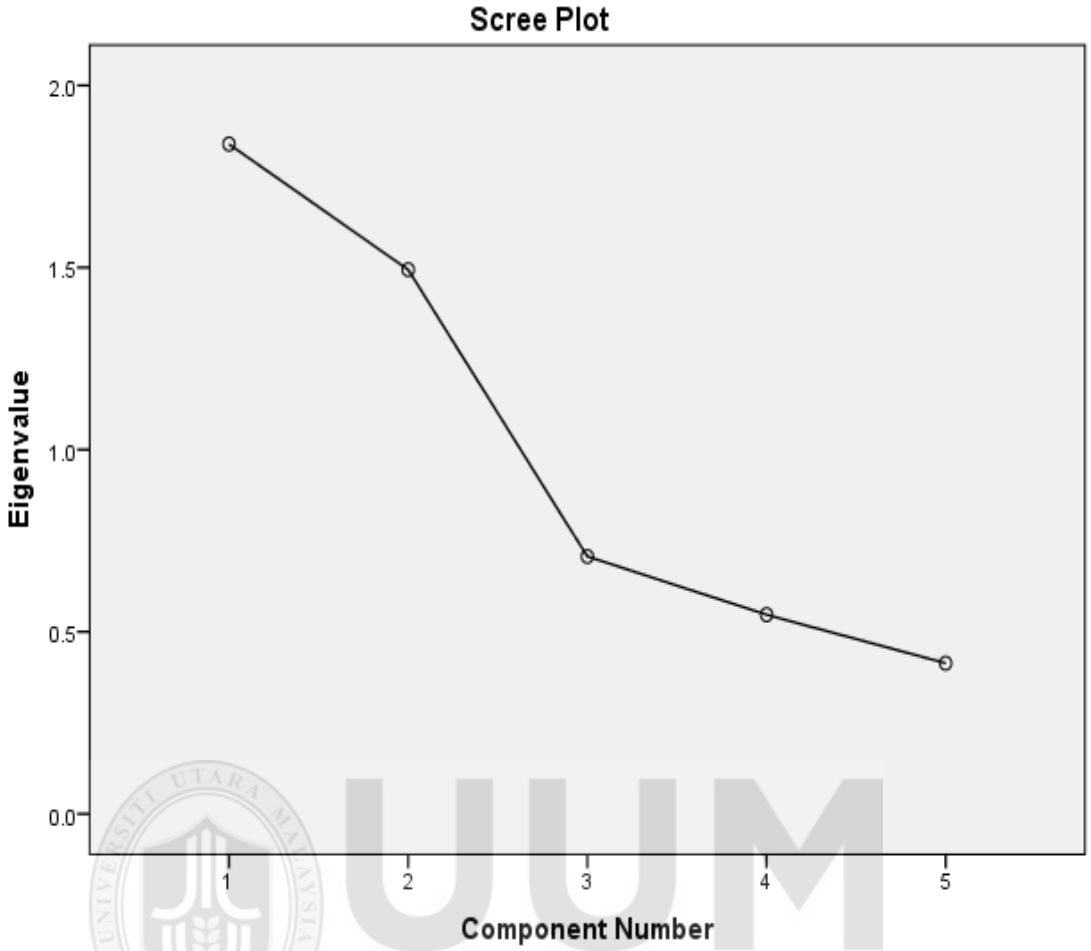
		PIQ3	PIQ4	PIQ5	PIQ9	PIQ10
Anti-image Covariance	PIQ3	.834	-.223	-.131	-.030	.002
	PIQ4	-.223	.742	-.278	.034	-.026
	PIQ5	-.131	-.278	.780	-.013	-.041
	PIQ9	-.030	.034	-.013	.658	-.381
	PIQ10	.002	-.026	-.041	-.381	.655
Anti-image Correlation	PIQ3	.688[a]	-.284	-.162	-.040	.002
	PIQ4	-.284	.607[a]	-.365	.049	-.038
	PIQ5	-.162	-.365	.647[a]	-.018	-.058
	PIQ9	-.040	.049	-.018	.505[a]	-.580
	PIQ10	.002	-.038	-.058	-.580	.513[a]

a. Measures of Sampling Adequacy(MSA)

Communalities

	Initial	Extraction
PIQ3	1.000	.511
PIQ4	1.000	.658
PIQ5	1.000	.582
PIQ9	1.000	.793
PIQ10	1.000	.789

Extraction Method: Principal Component Analysis.



Rotated Component Matrix[a]

	Component	
	1	2
PIQ4	.811	
PIQ5	.758	
PIQ3	.714	
PIQ9		.891
PIQ10		.886

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Correlation Matrix[a]

		PE2	PE3	PE4	PE5
Correlation	PE2	1.000	.666	.625	.586
	PE3	.666	1.000	.765	.562
	PE4	.625	.765	1.000	.670
	PE5	.586	.562	.670	1.000
Sig. (1-tailed)	PE2		.000	.000	.000
	PE3	.000		.000	.000
	PE4	.000	.000		.000
	PE5	.000	.000	.000	

a. Determinant = .110

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.788
Bartlett's Test of Sphericity	Approx. Chi-Square	502.754
	df	6
	Sig.	.000

Anti-image Matrices

		PE2	PE3	PE4	PE5
Anti-image Covariance	PE2	.486	-.150	-.041	-.134
	PE3	-.150	.357	-.188	.002
	PE4	-.041	-.188	.327	-.164
	PE5	-.134	.002	-.164	.505
Anti-image Correlation	PE2	.846[a]	-.361	-.102	-.270
	PE3	-.361	.757[a]	-.550	.004
	PE4	-.102	-.550	.750[a]	-.404
	PE5	-.270	.004	-.404	.824[a]

a. Measures of Sampling Adequacy(MSA)

Communalities

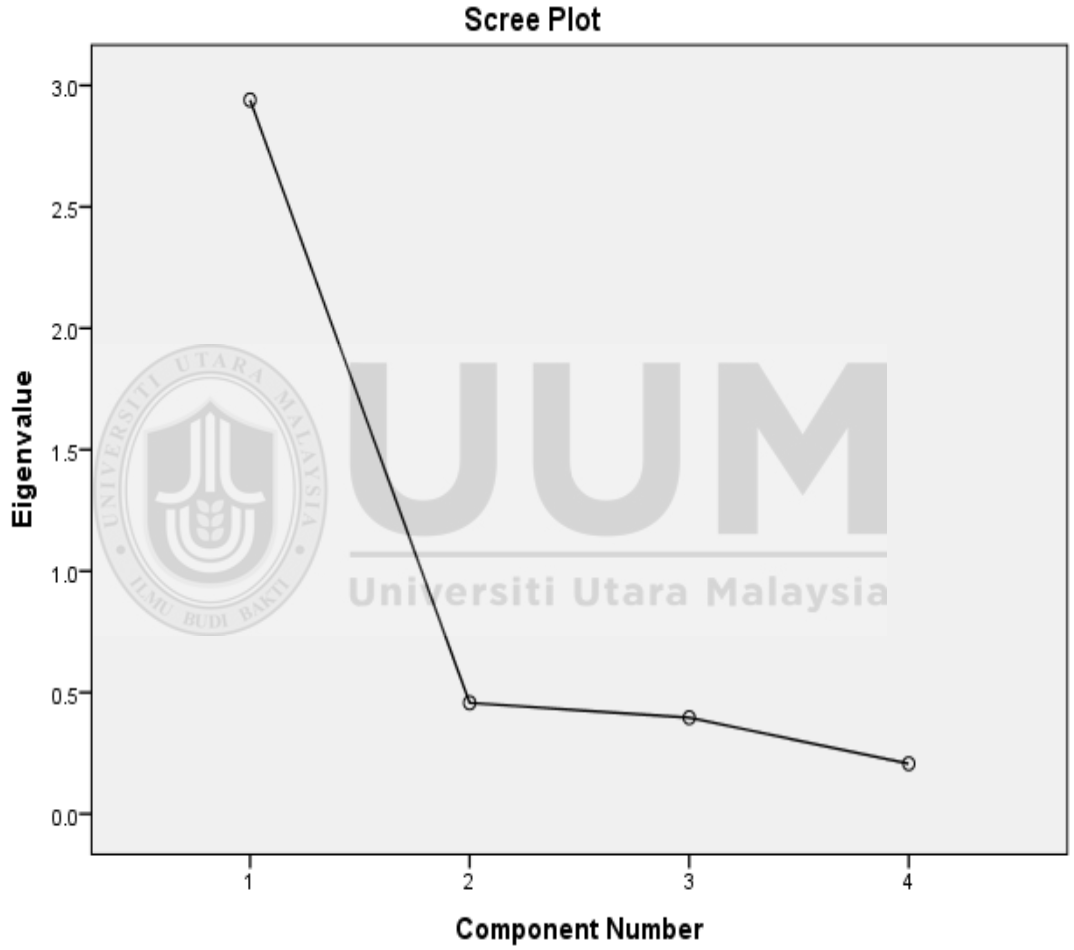
	Initial	Extraction
PE2	1.000	.699
PE3	1.000	.769
PE4	1.000	.805
PE5	1.000	.667

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.940	73.497	73.497	2.940	73.497	73.497
2	.457	11.431	84.928			
3	.396	9.906	94.834			
4	.207	5.166	100.000			

Extraction Method: Principal Component Analysis.



Component Matrix[a]

	Component
	1
PE4	.897
PE3	.877
PE2	.836
PE5	.816

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Correlation Matrix[a]

		CSE1	CSE3	CSE8	CSE9	CSE10
Correlation	CSE1	1.000	.608	.484	.474	.454
	CSE3	.608	1.000	.466	.465	.390
	CSE8	.484	.466	1.000	.418	.518
	CSE9	.474	.465	.418	1.000	.513
	CSE10	.454	.390	.518	.513	1.000
Sig. (1-tailed)	CSE1		.000	.000	.000	.000
	CSE3	.000		.000	.000	.000
	CSE8	.000	.000		.000	.000
	CSE9	.000	.000	.000		.000
	CSE10	.000	.000	.000	.000	

a. Determinant = .193

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.815
Bartlett's Test of Sphericity	Approx. Chi-Square	374.698
	df	10
	Sig.	.000

Communalities

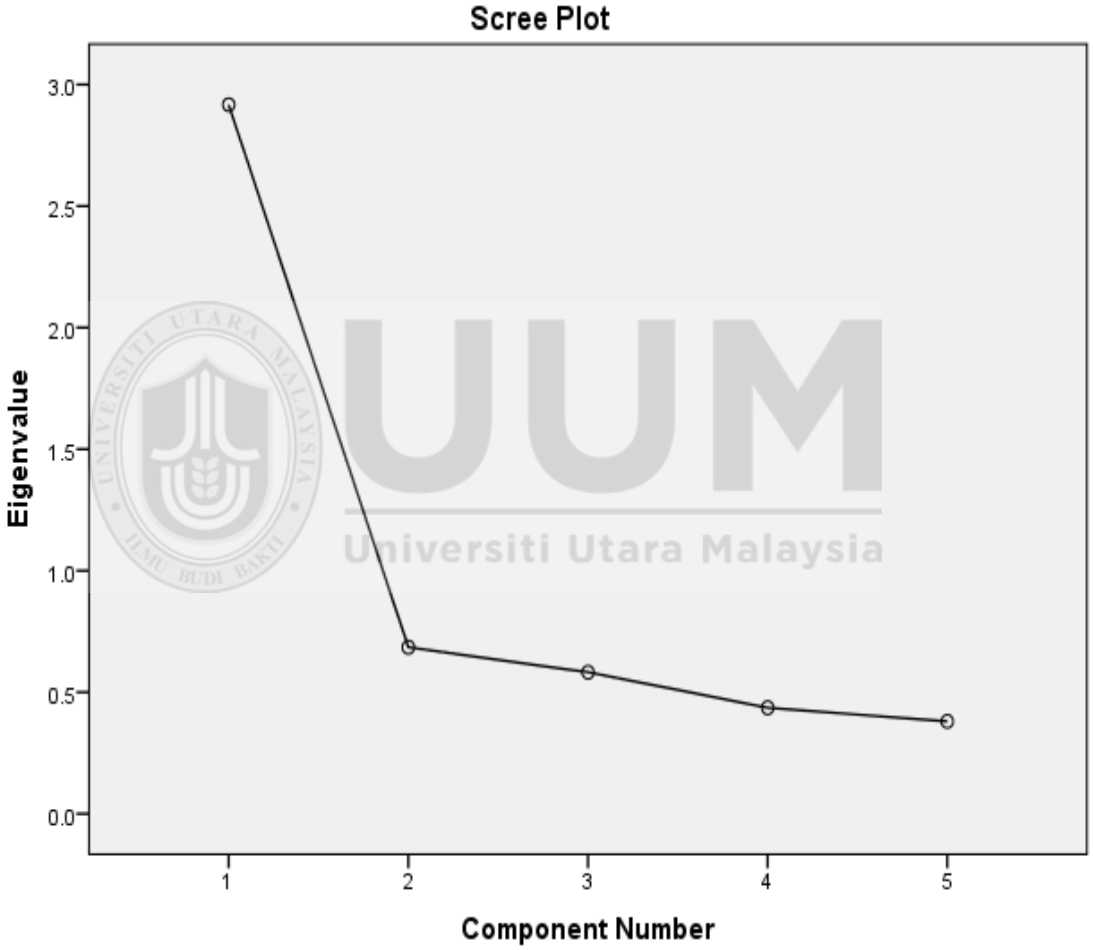
	Initial	Extraction
CSE1	1.000	.635
CSE3	1.000	.592
CSE8	1.000	.568
CSE9	1.000	.560
CSE10	1.000	.561

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.917	58.341	58.341	2.917	58.341	58.341
2	.685	13.700	72.040			
3	.582	11.645	83.685			
4	.436	8.720	92.405			
5	.380	7.595	100.000			

Extraction Method: Principal Component Analysis.



Component Matrix[a]

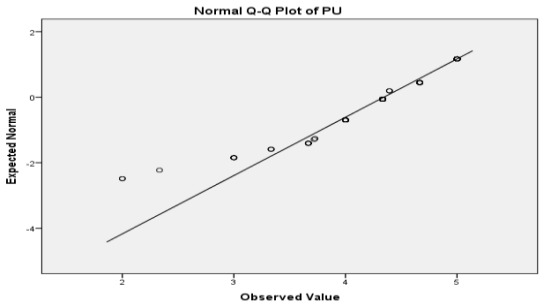
	Component
	1
CSE1	.797
CSE3	.770
CSE8	.754
CSE10	.749
CSE9	.749

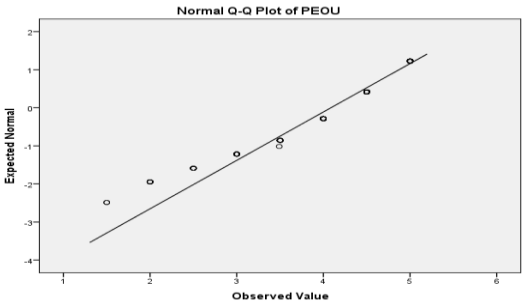
Extraction Method: Principal Component Analysis.

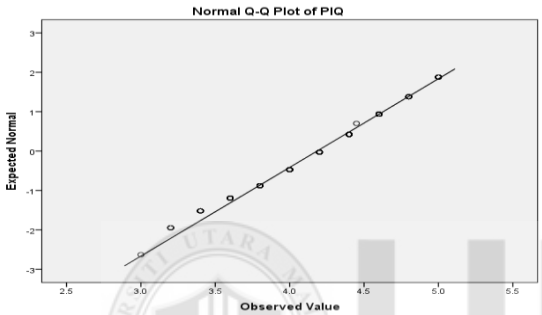
a. 1 components extracted.

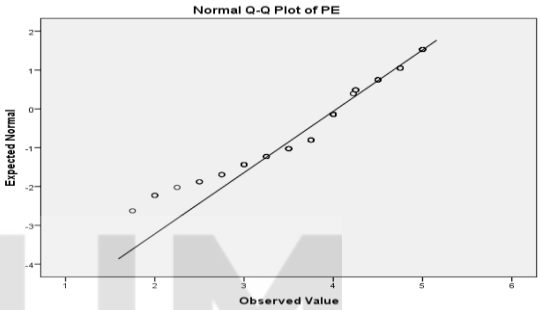
APPENDIX J

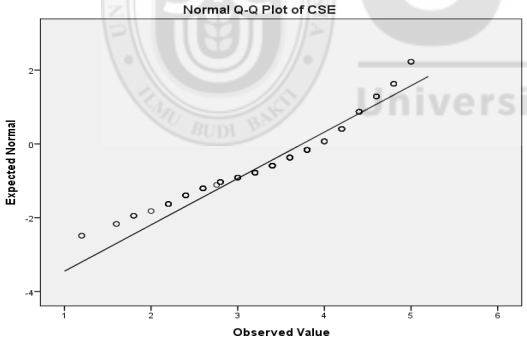
Test of Normality – Normal Q-Q Plots

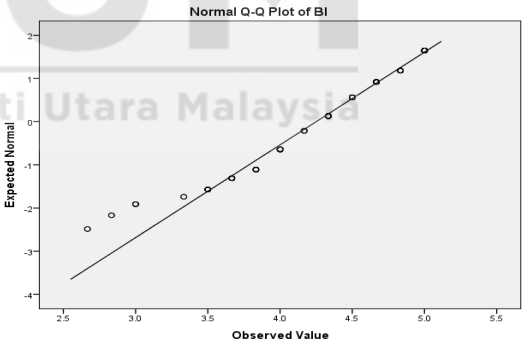












APPENDIX K

Reliability Test

Reliability Statistics

Cronbach's Alpha	N of Items
.795	6

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
CI1	21.36	5.701	.485	.780
CI2	21.39	5.604	.538	.767
CI4	21.26	5.508	.561	.761
CI5	21.26	5.315	.639	.742
CI6	21.17	5.752	.559	.762
CI7	21.06	5.983	.517	.772

Case Processing Summary

		N	%
Cases	Valid	231	100.0
	Excluded[a]	0	.0
	Total	231	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.780	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
PU2	8.66	1.564	.554	.769
PU3	8.71	1.255	.656	.660
PU4	8.68	1.380	.650	.667

Case Processing Summary

		N	%
Cases	Valid	231	100.0
	Excluded[a]	0	.0
	Total	231	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.702	2

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
PEOU4	4.13	.691	.546	.
PEOU5	4.04	.916	.546	.

Case Processing Summary

		N	%
Cases	Valid	231	100.0
	Excluded[a]	0	.0
	Total	231	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.552	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
PIQ3	16.61	4.188	.273	.526
PIQ4	16.54	3.877	.291	.511
PIQ5	16.72	3.559	.303	.502
PIQ9	16.87	3.198	.368	.461
PIQ10	16.94	2.755	.376	.463

Case Processing Summary

		N	%
Cases	Valid	231	100.0
	Excluded[a]	0	.0
	Total	231	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.876	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
PE2	12.14	3.827	.707	.851
PE3	12.15	3.926	.762	.833
PE4	12.06	3.638	.797	.816
PE5	12.12	3.625	.684	.865

Case Processing Summary

		N	%
Cases	Valid	231	100.0
	Excluded[a]	0	.0
	Total	231	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.819	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
CSE1	14.59	10.677	.650	.773
CSE3	14.82	10.825	.612	.783
CSE8	15.32	10.338	.606	.785
CSE9	14.96	11.030	.597	.788
CSE10	15.22	10.064	.600	.789

APPENDIX L

Correration Analysis

Correlations

		PU	PEOU	PIQ	PE	CSE	CI
PU	Pearson Correlation	1	.530**	.424**	.416**	.409**	.379**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	231	231	231	231	231	231
PEOU	Pearson Correlation	.530**	1	.416**	.589**	.554**	.471**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	231	231	231	231	231	231
PIQ	Pearson Correlation	.424**	.416**	1	.480**	.447**	.468**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	231	231	231	231	231	231
PE	Pearson Correlation	.416**	.589**	.480**	1	.483**	.322**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	231	231	231	231	231	231
CSE	Pearson Correlation	.409**	.554**	.447**	.483**	1	.519**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	231	231	231	231	231	231
CI	Pearson Correlation	.379**	.471**	.468**	.322**	.519**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	231	231	231	231	231	231

**. Correlation is significant at the 0.01 level (2-tailed).

APPENDIX M

Multiple Regression Analysis

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Perceived_Enjoyment, Perceived_Info_Quality, Perceived_Usefulness, Perceived_Ease_of_Use[b]	.	Enter

a. Dependent Variable: Behavioral_Intention

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.515[a]	.265	.252	.40273	.265	20.386	4	226	.000

a. Predictors: (Constant), Perceived_Enjoyment, Perceived_Info_Quality, Perceived_Usefulness, Perceived_Ease_of_Use

b. Dependent Variable: Behavioral_Intention

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13.226	4	3.307	20.386	.000[b]
	Residual	36.656	226	.162		
	Total	49.882	230			

a. Dependent Variable: Behavioral_Intention

b. Predictors: (Constant), Perceived_Enjoyment, Perceived_Info_Quality, Perceived_Usefulness, Perceived_Ease_of_Use

Coefficients[a]

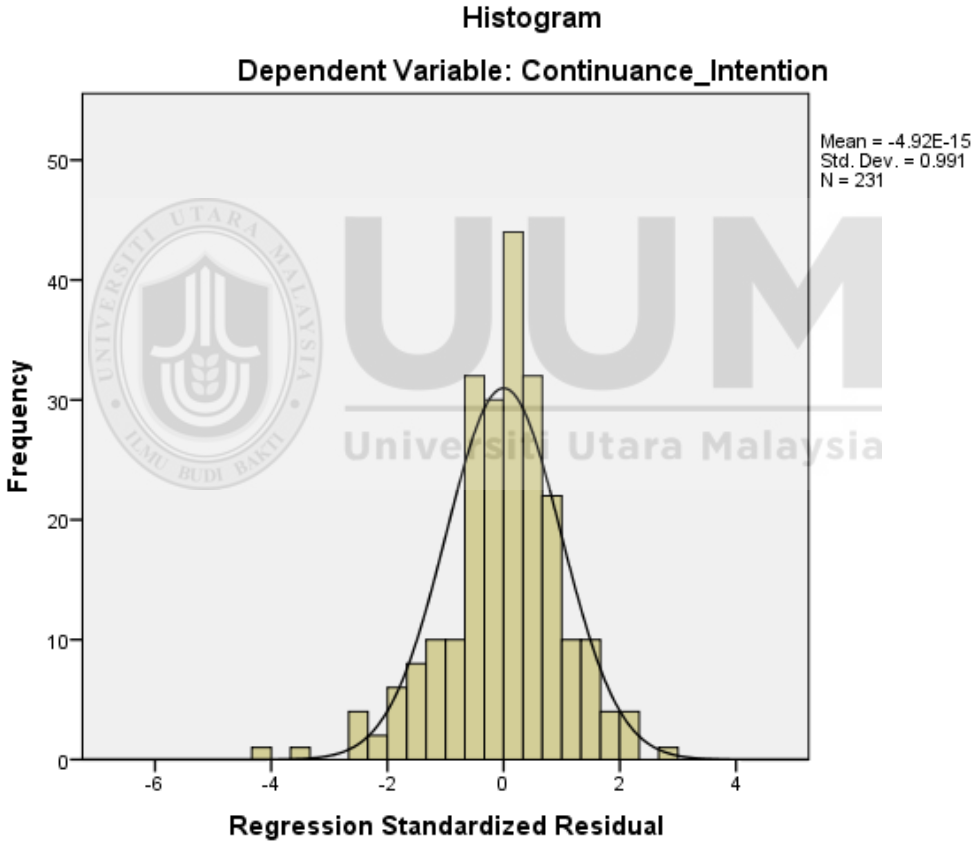
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	1.861	.286		6.505	.000	1.297	2.424					
	Perceived_Usefulness	.159	.055	.191	2.862	.005	.049	.268	.389	.187	.163	.727	1.375
	Perceived_Ease_of_Use	.129	.040	.218	3.210	.002	.050	.209	.391	.209	.183	.702	1.424
	Perceived_Info_Quality	.253	.066	.242	3.836	.000	.123	.384	.391	.247	.219	.818	1.223
	Perceived_Enjoyment	.028	.049	.038	.562	.575	-.069	.125	.287	.037	.032	.728	1.374

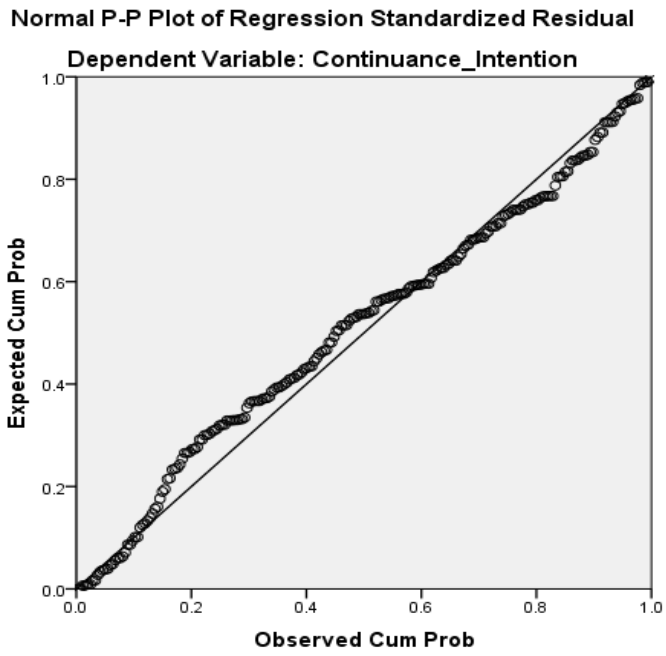
a. Dependent Variable: Behavioral_Intention

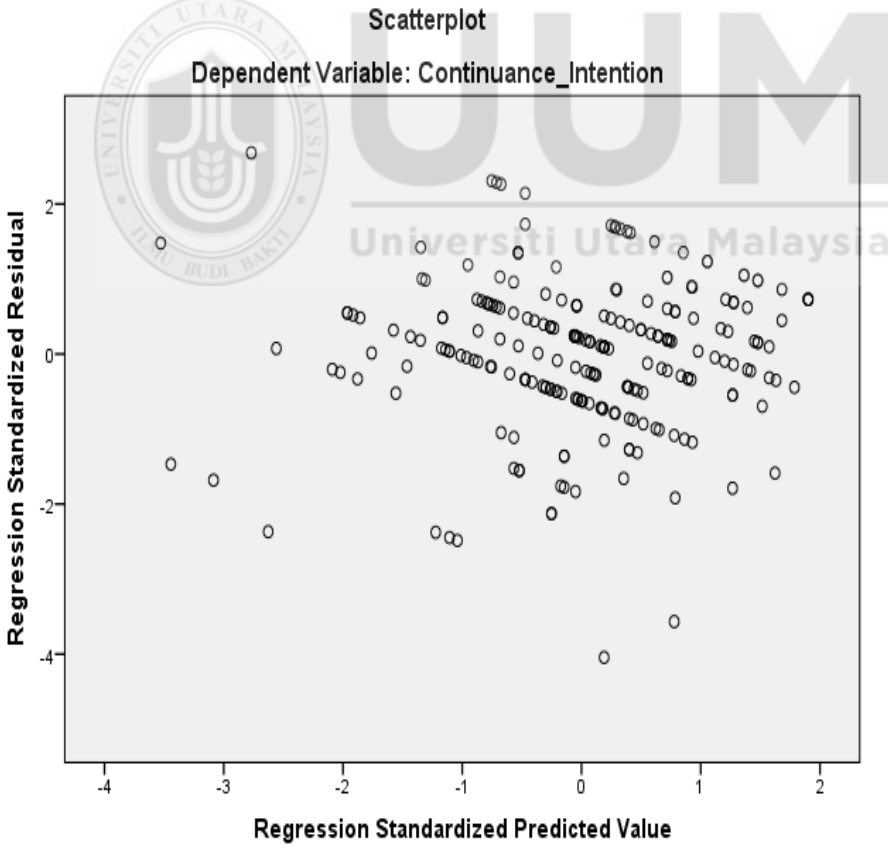
Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3.4043	4.7062	4.2504	.23980	231
Residual	-1.62910	1.08032	.00000	.39922	231
Std. Predicted Value	-3.528	1.901	.000	1.000	231
Std. Residual	-4.045	2.682	.000	.991	231

a. Dependent Variable: Behavioral_Intention







Moderation Test

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Perceived_Usefulness[b]	.	Enter
2	Comp_Self_Efficacy[b]	.	Enter
3	InteractionTerm[b]	.	Enter

a. Dependent Variable: Behavioral_Intention

b. All requested variables entered.

Model Summary[d]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.389[a]	.152	.148	.42989	.152	40.915	1	229	.000	
2	.517[b]	.267	.261	.40037	.116	36.019	1	228	.000	
3	.522[c]	.273	.263	.39978	.005	1.672	1	227	.197	1.933

a. Predictors: (Constant), Perceived_Usefulness
b. Predictors: (Constant), Perceived_Usefulness, Comp_Self_Efficacy
c. Predictors: (Constant), Perceived_Usefulness, Comp_Self_Efficacy, InteractionTerm
d. Dependent Variable: Continuance Intention

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.561	1	7.561	40.915	.000[b]
	Residual	42.321	229	.185		
	Total	49.882	230			
2	Regression	13.335	2	6.667	41.595	.000[c]
	Residual	36.547	228	.160		
	Total	49.882	230			
3	Regression	13.602	3	4.534	28.369	.000[d]
	Residual	36.280	227	.160		
	Total	49.882	230			

a. Dependent Variable: Continuance_Intention
b. Predictors: (Constant), Perceived_Usefulness
c. Predictors: (Constant), Perceived_Usefulness, Comp_Self_Efficacy
d. Predictors: (Constant), Perceived_Usefulness, Comp_Self_Efficacy, InteractionTerm

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	2.848	.221		12.881	.000	2.412	3.283					
	Perceived_Usefulness	.323	.050	.389	6.396	.000	.223	.422	.389	.389	.389	1.000	1.000
2	(Constant)	2.547	.212		12.016	.000	2.129	2.964					
	Perceived_Usefulness	.207	.051	.249	4.061	.000	.106	.307	.389	.260	.230	.855	1.170
	Comp_Self_Efficacy	.215	.036	.368	6.002	.000	.145	.286	.463	.369	.340	.855	1.170
3	(Constant)	2.402	.239		10.030	.000	1.930	2.873					
	Perceived_Usefulness	.230	.054	.277	4.265	.000	.124	.336	.389	.272	.241	.760	1.316
	Comp_Self_Efficacy	.224	.036	.382	6.145	.000	.152	.296	.463	.378	.348	.828	1.208
	InteractionTerm	.033	.026	.082	1.293	.197	-.018	.084	-.149	.085	.073	.806	1.241

a. Dependent Variable: Behavioral_Intention

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	Comp_Self_Efficacy	.368[b]	6.002	.000	.369	.855	1.170	.855
	InteractionTerm	.013[b]	.188	.851	.012	.832	1.202	.832
2	InteractionTerm	.082[c]	1.293	.197	.085	.806	1.241	.760

a. Dependent Variable: Behavioral_Intention
b. Predictors in the Model: (Constant), Perceived_Usefulness
c. Predictors in the Model: (Constant), Perceived_Usefulness, Comp_Self_Efficacy

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Perceived_Ease_of_Use[b]	.	Enter
2	Comp_Self_Efficacy[b]	.	Enter
3	InteractionTerm2[b]	.	Enter

a. Dependent Variable: Behavioral_Intention
b. All requested variables entered.

Model Summary[d]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.391[a]	.153	.149	.42963	.153	41.246	1	229	.000	
2	.508[b]	.258	.252	.40283	.106	32.478	1	228	.000	
3	.509[c]	.259	.250	.40344	.001	.318	1	227	.573	1.962

a. Predictors: (Constant), Perceived_Ease_of_Use
b. Predictors: (Constant), Perceived_Ease_of_Use, Comp_Self_Efficacy
c. Predictors: (Constant), Perceived_Ease_of_Use, Comp_Self_Efficacy, InteractionTerm2
d. Dependent Variable: Continuance_Intention

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.613	1	7.613	41.246	.000[b]
	Residual	42.269	229	.185		
	Total	49.882	230			
2	Regression	12.883	2	6.442	39.697	.000[c]
	Residual	36.998	228	.162		
	Total	49.882	230			
3	Regression	12.935	3	4.312	26.491	.000[d]
	Residual	36.947	227	.163		
	Total	49.882	230			

a. Dependent Variable: Behavioral_Intention

b. Predictors: (Constant), Perceived_Ease_of_Use

c. Predictors: (Constant), Perceived_Ease_of_Use, Comp_Self_Efficacy

d. Predictors: (Constant), Perceived_Ease_of_Use, Comp_Self_Efficacy, InteractionTerm2

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	3.305	.150		22.052	.000	3.010	3.600					
	Perceived_Ease_of_Use	.231	.036	.391	6.422	.000	.160	.302	.391	.391	.391	1.000	1.000
2	(Constant)	2.895	.158		18.330	.000	2.583	3.206					
	Perceived_Ease_of_Use	.138	.038	.233	3.676	.000	.064	.212	.391	.237	.210	.810	1.235
	Comp_Self_Efficacy	.211	.037	.361	5.699	.000	.138	.285	.463	.353	.325	.810	1.235
3	(Constant)	2.835	.190		14.931	.000	2.461	3.210					
	Perceived_Ease_of_Use	.146	.040	.246	3.642	.000	.067	.224	.391	.235	.208	.715	1.399
	Comp_Self_Efficacy	.217	.039	.371	5.627	.000	.141	.294	.463	.350	.321	.749	1.336
	InteractionTerm2	.012	.022	.038	.564	.573	-.031	.056	-.232	.037	.032	.727	1.376

a. Dependent Variable: Behavioral_Intention

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	Comp_Self_Efficacy	.361[b]	5.699	.000	.353	.810	1.235	.810
	InteractionTerm2	-.066[b]	-.957	.340	-.063	.786	1.272	.786
2	InteractionTerm2	.038[c]	.564	.573	.037	.727	1.376	.715

a. Dependent Variable: Behavioral_Intention

b. Predictors in the Model: (Constant), Perceived_Ease_of_Use

c. Predictors in the Model: (Constant), Perceived_Ease_of_Use, Comp_Self_Efficacy

APPENDIX N

Literature Review Mapping

No	Authors Title Publication	Objectives of the Study and the Related Variables	Model	Methodology			Analysis Technique	Result (Relationship)	Comments / Gaps
				Res. design	Sample	Instrument			
1	Wu, J. H., & Wang, S. C. (2005). Evaluation of the what drives mobile commerce?: an empirical revised technology acceptance model *Information & Management*, *42*(5), 719-729.	**Objectives:** Examines the factors that influence mobile commerce adoption **Variables:** **IVs:** perceived risk, cost, compatibility, perceived usefulness & perceived ease of use **DV: Intention**	**TAM**	Survey	373 mobile telephone users (Taiwan)	Questionnaire	Descriptive & SEM	Positive in all the variables except for perceived ease of use	Need for future studies to cover wider area and replicate in other environment
2	Khalifa, M., & Ning Shen, K. (2008). Explaining The Adoption Of Transactional B2C Mobile Commerce *Journal of enterprise information management*, *21*(2), 110-124.	**Objectives:** Examines specific factors pertaining to the individual adoption of B2C transactional mobile commerce. **Variables:** **IVs:** perceived usefulness & perceived ease of use, subjective norms, self-efficacy **DV: Intention to adopt**	**TAM & TPB**	Survey	202 mobile phone users (Hong Kong)	Questionnaire	Descriptive & SEM	Positive in all the variables except for perceived ease of use and subjective norms	Need to include social influence and individual characteristics variables

No	Authors Title Publication	Objectives of the Study and the Related Variables	Model	Methodology			Analysis Technique	Result (Relationship)	Comments / Gaps
				Res. design	Sample	Instrument			
3	Schierz, P. G., Schilke, O., & Wirtz, B. W. (2010). Understanding consumer acceptance of mobile payment services: an empirical analysis. *Electronic Commerce Research and Applications*, *9*(3), 209-216.	**Objectives:** Examines the factors that influence mobile payments adoption **Variables:** **IVs:** perceived compatibility, perceived security, perceived usefulness, perceived ease of use, individual mobility and subjective norm. **MV**: Attitude **DV: Intention to use**	**TAM**	Survey	1447 Mobile phone users (Germany)	Questionnaire	Descriptive & SEM	Positive in all the variables	Need for further similar research in other payment solutions and there is need to replicate the study in other countries
4	Ambak, K., Ismail, R., Abdullah, R. A., & Borhan, M. N. (2011). Using structural equation modeling and the behavioral sciences theories in predicting helmet use. *International Journal on Advanced Science, Engineering and Information Technology*, *1*(6), 639-645.	**Objectives:** It aimed at applying a behavioral sciences theory or model in predicting intention toward proper usage of helmet **Variables:** **IVs:** attitude, subjective norm and perceived behavioral control, health value, cues to action, perceived benefit, perceived barrier, perceived susceptibility, perceived severity, perceived usefulness, and perceived ease of use **DV: Intention to use**	**TAM , TPB & HBM**	Survey	1,150 cyclist (Malaysia)	Questionnaire	Descriptive & SEM	Positive for TAM & TPB. Negative for HBM	TAM & TPB are recommended for new studies in other health preventive related studies.

No	Authors Title Publication	Objectives of the Study and the Related Variables	Model	Methodology			Analysis Technique	Result (Relationship)	Comments / Gaps
				Res. design	Sample	Instrument			
5	Rawstorne, P., Jayasuriya, R., & Caputi, P. (2000) Issues in predicting and explaining usage behaviors with the technology acceptance model and the theory of planned behavior when usage is mandatory. *Proceedings of the twenty first international conference on Information systems* (pp. 35-44). Association for Information Systems	**Objectives:** To identify the relevant issues necessary for applying the technology acceptance model and the theory of planned behavior to the prediction and explanation of mandated IS usage, **Variables:** **IVs:** perceived usefulness, and perceived ease of use, perceived voluntariness, attitude, subjective norm , perceived behavioral control **MV: Intention to use** **DV: Actual Behavior**	**TAM & TPB**	Longitudinal Survey	138 nurses	Questionnaire	Descriptive Statistics & SEM	Positive for both TAM & TPB models	Further research on predicting and explaining mandated usage of information system is required as mandated use becomes increasingly prevalent in organizations
6	Wu, J. H., Shen, W. S., Lin, L. M., Greenes, R. A., & Bates, D. W. (2008). Testing the technology acceptance model for evaluating healthcare professionals' intention to use an adverse event reporting system. *International Journal for Quality in Health Care*, *20*(2), 123-129.	**Objectives:** To determines acceptance of adverse event reporting systems by healthcare Professionals. **Variables:** **IVs:** perceived usefulness, and perceived ease of use, subjective norm , trust & management support **DV: Behavioral Intention to use**	**TAM & TPB**	Survey	290 users of *Adverse event reporting system* *(Taiwan)*	Questionnaire	Descriptive Statistics & SEM	Positive relationships	1)Need for further similar research in other IS systems within and outside hospital environment 2) there is need to replicate the study in other countries
7	Sambasivan, M., Patrick Wemyss, G., & Che Rose, R. (2010). User acceptance of a G2B	**Objectives:** The study aimed at determining the factors that influence the	**Deleon IS success Model**	Survey	358 public servant officials	Questionnaire	Correlation Analysis	Positive relationships	Longitudinal study will better explain the casual

No	Authors Title Publication	Objectives of the Study and the Related Variables	Model	Methodology			Analysis Technique	Result (Relationship)	Comments / Gaps
				Res. design	Sample	Instrument			
	system: A case of electronic procurement system in Malaysia. *Internet Research*, *20*(2), 169-187.	intention and actual use of e-procurement system in the public sector. **Variables:** **IVs:** information quality, service quality system quality, trust, facilitating conditions and web design quality **MV: Intention to use EPS** **DV: Actual behavior**							relationship between the variables Further study of on the acceptability and success of other G2B systems within the public sector to validate the findings
8	Oni, A. A. & Ayo, C. K. (2010). An Empirical Investigation of the Level of Users' Acceptance of E-banking in Nigeria. *Journal of Internet Banking and Commerce*, *15*(1), 1-13.	**Objectives:** The paper focuses on determining the level of users' acceptance of the electronic banking services and investigating the factors that determine users' behavioral intentions to use electronic banking systems in Nigeria. **Variables:** **IVs :** Perceived Credibility , Computer Self-Efficacy, Perceived Usefulness, and Perceived Ease of Use **MV: Attitude** **DV: Intention to use**	**TAM**	Survey	450	Questionnaire	Correlation Analysis And Regression analysis	Positive relationships	Need to incorporate additional variables to further understand the factors that influence individual intention to use information systems

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9	Tella, A., & Olasina, G. (2014). Predicting Users' Continuance Intention Toward E-payment System: An Extension of the Technology Acceptance Model. *International Journal of Information Systems and Social Change (IJISSC)*, 5(1), 47-67.	**Objectives:** It examines the predicting behavior of users' continuance usage of electronic payment system. **Variables:** **IVs:** perceived benefits, attitude, perceived satisfaction, enjoyment, speed, perceived ease of use and perceived usefulness. **MV: Actual use** **DV: Continuance intention**	**Deleon & McLean IS success Model**	Survey	250 academic and non-academic Staff of a university	Questionnaire	Correlation Analysis And Regression analysis	Positive relationships	1)Need for further similar research to include some characteristics of the system such as the system quality 2)there is need to replicate the study in other countries 3) there is need to use other respondents other apart from the academic setting
10	Pai, F. Y., & Huang, K. I. (2011). Applying the Technology Acceptance Model to the Introduction of Healthcare Information Systems. *Technological Forecasting and Social Change*, *78*(4), 650-660.	**Objectives:** The study aimed at proposing a conceptual model that will test the willingness of adopting Health Information Systems in health institutions. **Variables:** **IVs:** system quality, information quality, service quality, perceived usefulness, perceived ease of use and intention to use **DV: Intention to use**	**TAM & Deleon & McLean IS success Model**	Survey	356 respondent chosen from nurses and head of departments in hospitals	Questionnaire	SEM	Positive relationships	Further research could be done to find out the effects of antecedents to the two models used. There is need for testing similar model in a wider hospitals such as clinics, regional hospitals and medical centers,

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11	Suki, N. M., & Suki, N. M. (2011). Exploring the relationship between perceived usefulness, perceived ease of use, perceived enjoyment, attitude and intention towards using 3G mobile *Journal of Information Technology Management*, *22*(1), 1-7.	**Objectives:** It examines the factors that influence individual intention towards 3G mobile use in Malaysia. **Variables:** **IVs:** perceived ease of use, perceived enjoyment, perceived usefulness, attitude and behavioral **DV: Intention to use**	**TAM**	Survey	100 Mobile telephone users	Questionnaire	Correlation Analysis And Regression analysis	Positive relationships	1)Need for further similar in other countries 2) There is need for further studies to find out the market, financial and industrial implications of 3Gmarkets
12	Terzis, V., & Economides, A. A. (2011). The acceptance and use of computer based assessment. *Computers & Education*, *56*(4), 1032-1044.	**Objectives:** **Variables:** **IVs:** perceived usefulness, perceived ease of use, perceived playfulness, computer self-efficacy, social influence, facilitating conditions, goal expectancy, content **DV: Intention to use**	**TAM & UTAUT**	Survey	173 undergraduate students	Questionnaire	PLS	Positive relationships	1)Need for similar studies with other group of respondents 2) There is need for additional variables to further test the relationships
13	Chow, M., Herold, D. K., Choo, T. M., & Chan, K. (2012). Extending the technology acceptance model to explore the intention to use Second Life for enhancing healthcare education. *Computers & Education*, *59*(4), 1136-1144.	**Objectives:** Examines the factors that determine student's acceptance and use of *online 3D Second Life* for learning process. **Variables:** **IVs:** perceived usefulness, perceived ease of use, and computer self-efficacy **DV:**	**TAM**	Survey	206 Nursing Undergraduate students	Questionnaire	Rgression Analysis using PLS	Positive relationships with exception of perceived ease of use (neutral)	1. The study was conducted in a single university. Thus, it lacks generalization. 2. It was recommended that future research should incorporate other

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		Behavioral intention							construct like 'concentration & hedonic consumption 3. Future work should measure the variables at several points in time.
14	Igbaria, M., Iivari, J., & Maragahh, H. (1995). Why do individuals use computer technology? A Finnish case study. *Information & management*, *29*(5), 227-238.	**Objectives:** The study critically investigates the motivating factors that drive individuals to accept and use computer technology. **Variables:** **IVs:** Perceived enjoyment and perceived usefulness **DV:** Intention to Use Computer	**TAM**	Survey	450 staff selected from various companies in Finland	Questionnaire	Descriptive and Multiple Regression Analysis	1. Perceived usefulness and perceived ease of use - Positive relationships (with regards to frequency of use, time of use and number of tasks) 2. Perceived Enjoyment – time of use only	1. Further studies are required to examine relative influence of perceived usefulness and perceived enjoyment on perception, beliefs and usage
15	Wang, Y. S., Lin, H. H., & Liao, Y. W. (2012 Investigating the individual difference antecedents of perceived enjoyment in students' use of blogging. *British Journal of Educational Technology*, *43*(1), 139-152.	**Objectives:** Examines the individual differences of individual antecedents of perceived enjoyment and its influence on blogging use intention among students. **Variables:** **IVs:** 1. Big personality traits - extraversion, agreeableness, conscientiousness, neurotism and openness to experience 2. Individual differences	**SELF DEVELOPED MODEL**	Survey	358 students selected from Taiwan students	Questionnaire	Multiple Regression Analysis	Extraversion, agreeableness, consciousness and PIIT – have significant influence on perceived enjoyment which in turn significantly influences Intention to use Blogs	There is need to include additional variables for individual difference antecedents. TAM is very important in explaining intention and as such it need to be tested in this kind of research

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		– computer self-efficacy and personal innovation in IT **Mediating variable:** Perceived enjoyment **DV:** Intention to use Blogging							Moderating variables can also be introduced in future studies
16	Premchaiswadi, W., & Porouhan, P. (2012) Factors affecting the passengers' intention toward "airline electronic ticketing" in Thailand. In *ICT and Knowledge Engineering (ICT & Knowledge Engineering), 2011 9th International Conference on* (pp. 177-186). IEEE.	**Objectives:** Factors that influence passengers' intention to use electronic airline ticketing. **Variables:** **IVs:** performance expectancy, effort expectancy, social influence, facilitating conditions, perceived security, perceived enjoyment, **Mediating variables:** price saving and time savings **DV:** Intention to use electronic ticketing	**UTAUT & TCA**	Survey	86 passengers of AirAsia targeted at airport venue	Questionnaire	Correlation Analysis	Positive relationship with except for social influence and performance expectancy. In addition, time saving does not moderate the relationship	1.The studies uses only experienced users of e-ticketing. Thus, future studies should use inexperienced users too. 2.Other technology acceptance models can be used for similar study in the future.
17	Xiang, J., Jing, L., Lee, H. S., & Choi, I. Y. (2014). Comparing the Effects of Perceived Enjoyment and Perceived Risk on Hedonic/Utilitarian Smartphone Applications.	**Objectives:** The study examined the factors that influence the intention to use smartphone application and to find the difference in individual user acceptance between hedonic and utilitarian smartphones	**TAM**	Survey	615 students that use smartphone applications selected from a Korean university	Questionnaire	Multiple regression analysis and correlation analysis using AMOS	Positive relationships except for perceived risk on both hedonic and utilitarian smartphone applications	Future research should look into other smartphone applications

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		applications. **Variables:** **IVs:** perceived ease of use, perceived usefulness, perceived risks and perceived enjoyment **DV:Behaviral** Intention							
18	Alenezi, A. R., Karim, A., Malek, A., & Veloo, A. (2010). An Empirical Investigation into the Role of Enjoyment, Computer Anxiety, Computer Self-Efficacy and Internet Experience in Influencing the Students' Intention to Use E-Learning: A Case Study from Saudi Arabian Governmental Universities. *Turkish Online Journal of Educational Technology-TOJET*, *9*(4), 22-34.	**Objectives:** Examining the relationship between perceived enjoyment and behavioral intention in computer usage at work and home **Variables:** **IVs:** Social factors Institutional factors Technological factors Cultural factors Demographic factors Internal independent factors **DV:** Behavioral Intention	**TAM**	Survey	384 undergraduate students chosen from Saudi Arabian public universities	Questionnaire	Descriptive statistics, Correlation Analysis and Multiple Regression Analysis using SPSS	Positive relationships	Since demographic factors are directly used, future research should use these factors as moderators or antecedents
19	Ariff et al (2013) The Effects of Computer Self-Efficacy and Technology Acceptance Model on Behavioral Intention in Internet Banking Systems *International Conference on Asia Pacific Business*	**Objectives:** Examines the effects of computer self-efficacy on the behavioral intention to use internet banking among potential youths in Malaysia. **Variables:** **IVs:** Perceived usefulness Perceived ease of use Perceived credibility	**TAM**	Survey	222 undergraduate students	Questionnaire	Multiple Regression Analysis	Positive relationships	The study uses university students only. Thus, similar study need to be conducted to incorporate different caliber of respondents. Also, other

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	Innovation and Technology Management Procedia - Social and Behavioral Sciences 57 (2012) 448 – 452	Computer self-efficacy **DV:** Behavioral Intention							models could be used to support the findings or otherwise.
20	Surej P John (2013) Influence of Computer Self-Efficacy On Information Technology Adoption *International Journal of Information Technology, Vol. 19, No. 1, 2013 1*	**Objectives:** To identify the antecedents and the effects of computer self-efficacy on individual intention toward computer use in social media networks. **Variables:** **IVs:** Perceived usefulness, computer anxiety and computer self-efficacy **DV:** Intention to use SNS	**SELF-DEVELOPED MODEL**	Survey	255 respondents selected from Bangkok metropolitan areas	Questionnaire	Multiple Regression Analysis	Positive relationships with the exception of computer anxiety	The study can be replicated in other parts of the world so culture, age and race can be observed on intention to use SNS by individuals.
21	Sun, H., & Zhang, P. (2006). The Role Of Moderating Factors In User Technology Acceptance *International Journal of Human-Computer Studies*, *64*(2), 53-78.	**Objectives:** Examines technology accepting factors in previous studies and explain their linitations **Variables:** **IVs:** perceived usefulness & perceived ease of use, subjective norms **MV**: Individual factors, technological factors and individual factors **DV: Intention**	**TAM**	Meta-Analysis	-	-	-	Moderating factors have effects on user technology acceptance	1)Need for additional variable into the model to explain the relationship more 2) Need for future studies to employ qualitative method (interpretive)

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22	Wangpipatwong, Chutimaskul, & Papasratorn (2008) Understanding Citizen's Continuance Intention to Use e-Government Website: a Composite View of TechnologyAcceptance Model and Computer Self-Efficacy *Journal of e-Government* Volume 6 Issue 1, pp 55 - 64, available online at www.ejeg.com	**Objectives:** Examines the factors that influence the continuance intention to use electronic government websites among citizens in Thailand. **Variables:** **IVs:** **DV:** Continuance Intention	**TAM**	Online Survey	614 educated and experienced citizens that use government related websites.	Questionnaire	Descriptive statistics, Correlation Analysis and Multiple Regression Analysis	Positive relationships	Future research should interview for uneducated and inexperienced citizens to enable determine their intention too. Secondly, the role of other factors that may correlate the continuous intention of government websites among citizens
23	Chien-Wen David Chen and Chiang-Yu John Cheng (2009) Understanding consumer intention in online shopping: a re-specification and validation of the DeLone and McLean model *Behaviour & Information Technology* *Vol. 28, No. 4, July–August 2009, 335–345*	**Objectives:** Examines consumer intention in online shopping by separating 'intention' and 'use' due to the satisfaction gained **Variables:** **IVs:** Information Quality System Quality Service Quality **MV:** Satisfaction, **DV1:** Intention **DV2:** Actual use	**Deleon & McLean IS success Model**	Online Survey	331 experienced users of online shopping	Web based Questionnaire	Correlation Analysis and Multiple Regression Analysis	Positive relationships In addition, actual usage is predicted by intention	
24	Stacie Petter and Ann Fruhling(2011) Evaluating the success of an emergency response medical information system	**Objectives:** It explores the success of an emergency response medical information system (a system that was developed to aid	**Deleon & McLean IS success Model**	Online Survey	The whole 64 users of the system	Online Questionnaire	Correlation analysis and Regression analysis	1.Positive relationships 2.individual impact positively affects organizational	1.The sample size was relatively small and thus the need future studies to use larger samples.

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	International journal of medical informatics 8 0 480–489	laboratory technologists of public health institutions in disease diagnoses) among its users. **Variables:** **IVs:** Information Quality System Quality Service Quality **MedV:** User satisfaction **DV1:** Intention to use **DV2:** Individual impact **DV2:** Organizational impact						impact	2.Only single system (ERMIS) was evaluated. Future studies should evaluate other similar systems
25	Wei-Tsong Wang and Chia-Cheng Lu (2014) Determinants Of Success For Online Insurance Web Sites: The Contributions From System Characteristics, Product Complexity, And Trust *Journal of Organizational Computing and Electronic Commerce*, 24: 1–35, 2014	**Objectives:** To determine the success and intention for continuous usage of online insurance websites. **Variables:** **IVs:** Information Quality, System Quality, Service Quality, Perceived product complexity and Trust **MedV:** User satisfaction **DV1:** Re-purchase Intention	**Deleon & McLean IS success Model**	Online Survey	270 online insurances consumers in Taiwan	Online Questionnaire	Regression analysis using LISREL software	The results indicate that perceived product complexity, trust, and satisfaction are determinants of repurchase intention.	1.Future studies can dwell on other aspect of e-commerce and make a comparison across different industries using the same framework or extended framework 2. Similar studies need to be done in other less developed countries that are just embracing IT to see the differences that might arise.